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Cover Me: Managers' Responses to Changes in Analyst Coverage in the Post-Regulation FD Period

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ABSTRACT: We show that managers increase the volume of public financial guidance in response to decreases in analyst coverage of their firms, particularly to decreases that are driven by exogenous reduction in brokerage firm size. Managers do not respond to increases in analyst coverage. The managerial guidance response to decreases in coverage reflects the trade-off between the marginal benefits from analyst coverage and the marginal costs of providing guidance. Specifically, the response is concentrated within firms engaging in equity issuance activities, firms with low stock liquidity, and firms with low current guidance levels. The response is also concentrated within firms whose remaining analyst pool is smaller in number and/or has a lower percentage of analysts who are positive about the firm or who belong to a large brokerage house. Overall, our results shed insights on the interaction between managers and analysts and on how the value of analysts, as perceived by managers, varies in the cross-section with underlying firm and analyst characteristics.

Keywords: *managerial guidance; analyst coverage; value of analysts.*

Data Availability: *All data used in this study are publicly available from sources identified in the text.*

> How can under-covered firms persuade independent analysts to publish research on them? CFOs and investor relations experts agree that coverage is driven not only by a good story and growth potential, but also by regular communication and intelligent targeting of the analyst community.
>
> —Rana (2008)

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I. INTRODUCTION

Research has documented that analyst coverage stimulates investor interest and improves liquidity (Merton 1987; Irvine 2003; Roulstone 2003), leading to a more accurate company valuation (Rana 2008). Given these benefits, it is reasonable to expect that corporate managers value analyst coverage. Anecdotal evidence shows that CEOs and CFOs are concerned about losing analyst coverage, as their firms compete for investors' limited capital and attention (Rana 2008). Similarly, an emerging literature on investor relations (e.g., Bushee and Miller 2012) shows that the goal of such activities is to attract interest from institutional investors, and that coverage by sell-side analysts is an important channel for attracting institutional investor interest.

Despite the conventional wisdom that managers consider analyst coverage to be important, little empirical research has directly examined whether and how managers value coverage. For example, are managers concerned about attracting and maintaining analyst coverage, and, if so, what do they do to maintain or enhance analyst interest in their firms? How does the value of analyst coverage vary in the cross-section? We seek to address these questions by examining managers' responses to changes in analyst coverage. If managers perceive analyst coverage to be valuable, then changes in coverage should elicit a managerial response. In particular, research and surveys of investor relations professionals indicate that the quality and quantity of corporate disclosures, such as financial guidance from managers, are key drivers of analysts' interest in and willingness to cover a firm (Lang and Lundholm 1996; Bushee and Miller 2012). Therefore, we expect changes in the level of analyst coverage to affect managers' incentives to issue guidance of prospective performance.[1]

Accordingly, we examine managers' decisions to issue guidance in response to changes in analyst coverage, and how this response varies in the cross-section with observable firm and analyst characteristics. If managers value analyst coverage, then they have incentives to increase guidance to recoup analysts (in the case of decreased coverage) or to retain analysts (in the case of increased coverage). However, increasing guidance involves direct costs and indirect costs such as proprietary and litigation costs (Verrecchia 1983; Skinner 1994). Therefore, managers' guidance responses to changes in analyst coverage depend eventually on their cost-benefit trade-off for providing more guidance. To the extent that the benefit of increasing guidance is to recoup or retain analysts, managers' response reflects their trade-off between the value added by analysts and the cost of attracting or retaining analysts. Thus, observing different guidance responses for different types of firms provides insight on this trade-off and, in particular, allows us to infer how the perceived value of analyst coverage varies in the cross-section.

Examining a sample of 4,515 firm-years spanning 2001–2005, we find a significant increase in guidance from managers in response to decreases in analyst coverage and an insignificant response to increases in analyst coverage. To further understand managerial decision making in the face of a loss of coverage, we separate out decreases that are driven by downsizing of brokerage houses from decreases that result largely from other factors (e.g., deterioration in the firm's performance or attractiveness as an investment banking client) using a modified Yu (2008) procedure. This procedure decomposes decreases in analyst coverage into largely exogenous and largely endogenous components. We find that the overall response to decreases in coverage is driven by the response to downsizing-related decreases, suggesting that these exogenous decreases are perceived as being more reversible. The relatively muted response to decreases driven by endogenous factors also suggests that increased disclosure may not necessarily be a substitute for fundamental performance in attracting analyst coverage.

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[1] Managers could also increase disclosure through other channels, such as SEC filings and press releases. The effects that we document are therefore a conservative estimate of the disclosure response to changes in coverage.

Our main analyses focus on how managers' guidance response to changes in analyst coverage varies in the cross-section with underlying economic characteristics of the firm or the analyst that could make analyst coverage more valuable. Consistent with expectation, we find that the guidance response to decreases in coverage is concentrated in firms with high equity issuance activity and firms with low stock liquidity. Further, the response is stronger for firms with low guidance levels, suggesting that the marginal benefit of issuing guidance relative to the marginal cost decreases with the prevailing guidance level.

The response to decreases in coverage is stronger for firms that have become thinly covered after the change, suggesting that the marginal benefit of coverage decreases with the number of analysts covering the firm. We also find that the response to decreases in coverage is driven by firms with a lower proportion of positive recommendations from remaining analysts and by firms with a lower proportion of analysts from large brokerage houses, consistent with managers valuing these specific analyst characteristics. Overall, these results are consistent with managers responding to changes in analyst coverage based on the trade-off between the marginal value of analyst coverage and the marginal cost of issuing guidance.

We complete our analyses by showing a significant increase in analyst coverage subsequent to managers' guidance response to the initial decrease in coverage. This validates our presumption that managers of firms with dwindling coverage increase guidance in order to regain analysts, and that increasing guidance is indeed an effective strategy to regain analyst coverage.

Our results yield several important contributions. First, while it is generally assumed that managers value analyst coverage, only limited research has shown what actions managers take to gain or retain coverage.[2] We complement this research by showing that managers are willing to take costly actions such as increasing guidance to recoup losses of analysts, implying that managers perceive analyst coverage to be valuable. The asymmetric response to decreases and increases in analyst coverage also suggests that managers are more concerned about recouping the loss of analyst coverage than about catering to the demands of newly added analysts.

Second, we provide one of the first comprehensive analyses of cross-sectional variation in the value of analyst coverage. Prior studies have shown that analyst coverage is valuable in specific contexts, but do not examine how the value of analyst coverage varies in the cross-section. For example, Bowen et al. (2008) show that analyst coverage is negatively correlated with cost of equity in SEOs. However, it is not clear whether managers would value analysts more when they expect to issue equity than when they do not. Our finding that managers respond differently to losses of analyst coverage for different types of firms implies that managers value coverage more in certain situations, such as when they have low stock liquidity or have plans to raise equity capital. Our results also show that the perceived value of coverage depends on the characteristics of the analyst pool following the firm: the marginal value of additional coverage declines as the analyst pool becomes larger, as the recommendations of current analysts become more favorable, or as the proportion of analysts from the largest brokerage houses increases.

Third, we examine the differential implications of exogenous decreases in analyst coverage. Kelly and Ljungqvist (2007) and Hong and Kacperczyk (2010) also examine exogenous termination of coverage, and find that such decreases in coverage create a deteriorating information environment for the stock. We show, however, that managers respond actively to such declines by changing disclosure policies, especially when analyst coverage is more valuable. Finding that managers respond mainly to exogenous decreases in coverage also implies that such decreases are more likely to be reversible than decreases driven by endogenous factors such as deterioration in firm performance.

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[2] Krigman et al. (2001) show that firms switch lead underwriters to get higher-quality analyst coverage. Cliff and Denis (2004) show that IPO firms essentially pay for higher-quality analyst coverage by accepting more IPO underpricing. However, both studies only speak to specialized settings of IPOs and SEOs, and may not generalize to the entire cross-section of firms. Most recently, Bushee and Miller (2012) show that firms engage in investor relations activities to improve visibility with analysts, suggesting that coverage is valuable to firms.

Finally, our results shed insights on the interaction between disclosure and analyst coverage. Prior research largely takes the perspective that analysts initiate coverage following increased disclosure (e.g., Lang and Lundholm 1996). However, controlling for the determinants of changes in guidance, we show that disclosure policies also evolve *in response to* changes in coverage. Hence, we document a new dimension to the dynamics between managers and analysts.

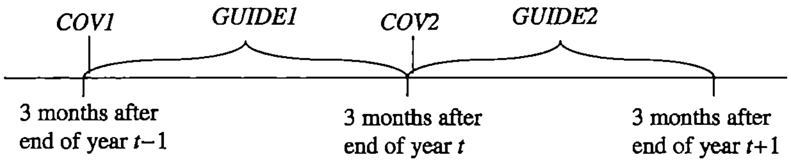
Section II describes the sample. Section III examines the average guidance responses to decreases and increases in analyst coverage. Section IV examines cross-sectional variation in managers' responses, conditional on firm and analyst characteristics. Section V examines analyst coverage subsequent to managers' guidance responses. Section VI concludes.

II. SAMPLE AND DESCRIPTIVE STATISTICS

Sample Selection

We obtain annual analyst coverage data from I/B/E/S and managerial guidance data from FirstCall's Company Issued Guidance (CIG) database for 2001–2005.[3] We start our sample in 2001, after Regulation Fair Disclosure (FD) became effective in October 2000. We exclude the pre-Regulation FD period because pre-FD, managers had the option to communicate privately with analysts in response to analysts' add/drop decisions. Therefore, the managerial guidance response is not completely observable in the pre-FD period.

As the timeline below shows, our "initial" and "new" coverage levels *COV1* and *COV2* measure the number of individual analysts as of three months after the end of year $t-1$ and year t, respectively, when annual financial information becomes available. We measure the "initial" ("new") level of guidance as the number of individual units of guidance issued from the fourth month after the end of year $t-1$ (year t) to the third month after the end of year t (year $t+1$) and label this *GUIDE1* (*GUIDE2*). Therefore, the change in guidance is measured for the 12-month period following the change in analyst coverage. This construction should help to isolate changes in guidance that are in response to changes in analyst coverage, mitigating concerns that changes in guidance and changes in coverage are both driven by other factors operating contemporaneously in the firm's business environment.


COV1
GUIDE1
COV2
GUIDE2
3 months after end of year t−1
3 months after end of year t
3 months after end of year t+1

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[3] We delete an entry in the CIG database if the guidance date is more than 90 days after the corresponding fiscal period end. We also delete a firm-year if its latest consensus date in I/B/E/S is after the corresponding earnings announcement date or if its earnings announcement date is more than 90 days after the corresponding fiscal year-end. These observations are likely to be data errors.

FirstCall's CIG database contains public guidance issued by managers on key financial information such as earnings and cash flows. We include every valid entry in the database as a separate unit of guidance, regardless of its type (e.g., earnings per share or cash flow per share), horizon (e.g., for the current quarter or for the next year), nature (e.g., qualitative or quantitative), or timing (e.g., issued on the same date). Therefore, we incorporate in our metric of disclosure not only the frequency of guidance, but also its richness, scope, or quality.[4]

We only include firm-years with greater-than-zero *COV1* and *COV2*, and greater-than-zero *GUIDE1* and *GUIDE2*. There are two reasons for these requirements. First, while it is interesting to examine why analysts, as a group, initiate (i.e., $COV1 = 0$ and $COV2 > 0$) or completely drop (i.e., $COV1 > 0$ and $COV2 = 0$) coverage of a firm, or why firms initiate (i.e., $GUIDE1 = 0$ and $GUIDE2 > 0$) or completely stop (i.e., $GUIDE1 > 0$ and $GUIDE2 = 0$) guidance, it is likely that these firms are undergoing more fundamental changes in their operating or information environment compared to other firms (Khorana et al. 2010). Therefore, this choice increases the homogeneity of our sample. Second, the CIG database only includes guidance on firms that it tracks; there is no affirmative identification of firms that issue no guidance, making it problematic to interpret a lack of CIG coverage as no guidance. Chuk et al. (2009) show that the completeness of CIG coverage is higher for firms followed by at least one analyst.[5] Therefore, we take a conservative approach and require that firms be covered by CIG at both time t and $t+1$ (i.e., $GUIDE1 > 0$ and $GUIDE2 > 0$), and that firms have at least one analyst at both time $t-1$ and t (i.e., $COV1 > 0$ and $COV2 > 0$). These requirements limit our ability to generalize results beyond relatively large firms.[6] We extract control variables from Compustat, CRSP, and Thomson Financial, yielding a final sample of 4,515 firm-years. The number of observations annually ranges from 700 in 2001 to 1,039 in 2004.

Sample Descriptive Statistics

Table 1, Panel A describes analyst coverage and managerial guidance. Our sample firms have mean (median) initial analyst coverage of 9.13 (7) and mean (median) new coverage of 9.32 (8). The change variable ΔCOV measures the raw change in coverage (i.e., $COV2 - COV1$). On average, the sample experiences a slight increase in analyst coverage (0.19), although the median firm experiences no changes in coverage. Percentage change in coverage, $\%\Delta COV$, has a mean (median) of 13 percent (0 percent). The first and third quartiles of ΔCOV ($\%\Delta COV$) are −1 (−15 percent) and 2 (25 percent), respectively, showing some shifts in analyst coverage. The key independent variables *DEC* (*INC*) take the absolute value of $\%\Delta COV$ if the firm experiences a decrease (increase) in coverage, and 0 otherwise. *DEC* and *INC* have means of 10 percent and 22 percent, respectively; both have zero medians.

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[4] Managers may not change guidance frequency but can expand the information set they provide at each date. Disaggregation in guidance enhances credibility, and is perceived as better quality disclosure (Hirst et al. 2007).

[5] Chuk et al. (2009) find a significant change in coverage completeness around 1998. Anilowski et al. (2007) find an increase in CIG coverage in 2001 as well. As our sample starts in 2001, we are not subject to the data problem discussed in Chuk et al. (2009). To address any potential data issues caused by the 2001 coverage increase, we redo all analyses excluding all observations that use 2001 data. We also estimate all regressions with year fixed effects. In both sensitivity tests, the results are virtually unchanged. Finally, we estimate our regressions by year and find similar results for every year except 2001.

[6] We check how representative our sample is by comparing it to the intersection of Compustat and I/B/E/S and the intersection of Compustat, I/B/E/S, and CIG. Average market value is \$5.33bn for our sample, in comparison to \$3.96bn and \$4.55bn for the two base samples, respectively. The average book-to-market ratio is 0.50 for our sample, compared to 0.51 and 0.52 for the two base samples, respectively.

TABLE 1
Descriptive Statistics

Panel A: Descriptive Statistics of Analyst Coverage Variables and Managerial Guidance Variables

Variable	Mean	Median	25th Pctl.	75th Pctl.	Std. Dev.
COV1	9.13	7	4	13	6.74
COV2	9.32	8	4	13	6.74
ΔCOV	0.19	0	−1	2	2.74
%ΔCOV	0.13	0	−0.15	0.25	0.58
DEC	0.10	0	0	0.15	0.17
INC	0.22	0	0	0.25	0.52
GUIDE1	6.51	6	3	9	4.38
GUIDE2	6.48	6	4	9	4.45
ΔGUIDE	−0.03	0	−2	2	3.60
%ΔGUIDE	0.23	0	−0.30	0.40	1.04

Panel B: Descriptive Statistics of Control Variables in Models of Changes in Guidance

Variable	Mean	Median	25th Pctl.	75th Pctl.	Std. Dev.
Size and Fundamental Performance					
ΔSIZE	0.095	0.119	−0.122	0.347	0.484
ΔEARN	0.014	0.009	−0.011	0.031	0.139
ΔSALE	0.122	0.093	0.010	0.198	0.256
ΔLOSS	0.006	0.000	0.000	0.000	0.370
Demand for Guidance					
ΔMERGE	−0.013	0.000	0.000	0.000	0.489
ΔEQUITY	0.004	0.001	−0.003	0.007	0.087
ΔBTM	−0.005	0.000	−0.085	0.083	0.474
ΔCAPEX	0.003	0.001	−0.007	0.010	0.036
ΔRDX	0.003	0.000	0.000	0.002	0.031
ΔIO	0.038	0.028	−0.011	0.078	0.112
ΔEVOL	−0.019	−0.001	−0.008	0.003	0.199
ΔSPREAD	−0.003	−0.001	−0.004	0.000	0.005
Supply of Guidance					
HHI	0.177	0.128	0.065	0.241	0.165
ΔLITIGATE	0.502	0.505	0.259	0.742	0.284
ΔWEALTH	0.044	0.037	−0.175	0.325	0.938
Δ%CEOOWN	−0.002	0.000	−0.001	0.000	0.164
Other					
LAG_%ΔGUIDE	0.544	0.083	−0.200	0.750	1.415
GARS	0.641	1.000	0.000	1.000	0.480

The sample is based on 4,515 firm-years for 2001–2005. See Appendix A for detailed variable definitions.

On average, our sample firms issue 6.51 units of guidance initially and 6.48 units in the subsequent year. The median guidance is 6 in both years. *ΔGUIDE* measures the raw change in guidance (i.e., *GUIDE2* – *GUIDE1*), with a mean (median) of −0.03 (0), implying a small decrease in guidance. The firm at the first (third) quartile reduces (increases) guidance by 2 (2) units. Our dependent variable, *%ΔGUIDE*, is the percentage change in guidance, with a mean (median) of 23 percent (0). The first and third quartiles are −30 percent and 40 percent, respectively.[7]

III. MANAGERS' RESPONSES TO CHANGES IN ANALYST COVERAGE

Analyst research has been shown to make stock prices more informationally efficient, leading to liquidity gains, lower trading costs, and a lower cost of capital (Frankel and Li 2004). As information intermediaries, analysts also increase investor cognizance of firms, which can increase market value (Merton 1987). For example, analyst coverage initiations, forecast revisions, and recommendation changes are followed by increased trading volume and media coverage (Bonner et al. 2007). Analyst coverage therefore provides economically significant benefits to firms that are likely to be valued by managers.

In the event of declining analyst coverage, firms lose some of these benefits. In addition, the market could interpret analysts' decision to stop coverage as an adverse signal (Shon and Young 2008), exacerbating the costs of losing analyst coverage. Thus, we expect managers to have incentives to stop or reverse a trend of decreasing coverage.[8] A key determinant of analyst coverage is the quality and quantity of corporate voluntary disclosures, in particular managerial guidance (Lang and Lundholm 1996; Healy et al. 1999). A 2003 survey of managers conducted by the National Investor Relations Institute indicates that 98 percent of respondents believed that analysts wanted guidance.[9] Because improving guidance could make the stock more attractive for the analyst to cover, managers who wish to reverse a trend of decreasing coverage are likely to have incentives to increase guidance.[10,11]

Managers are also likely to have incentives to provide additional guidance when analyst coverage increases. Analysts demand assistance in predicting earnings (Graham et al. 2005). Such demand is likely to be greater from analysts who have just initiated coverage, as they are not as familiar with the firm's activities. Graham et al. (2005) show that an important reason for giving guidance, from the executive's perspective, is to ease analysts' job in forecasting EPS, and obtain higher quality market expectations as a result. Therefore, managers of firms with an increase in analyst coverage could have incentives to increase guidance, to assist new analysts in forecasting, and incentivize them to continue coverage.

Thus, managers have incentives to increase guidance when their firms gain or lose coverage, albeit for different reasons. However, voluntary disclosure is costly, and disclosure costs affect managers' guidance decisions in the wake of a change in analyst coverage. Proprietary costs reduce the incentives to voluntarily disclose (Verrecchia 1983). Litigation costs could either trigger more disclosure about future prospects, especially if they are unfavorable (Skinner 1994), or deter disclosures about future prospects if there are negative consequences to missing a good-faith forecast (Rogers et al. 2009).

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[7] Untabulated statistics show that the average *%ΔGUIDE* for firms experiencing a decrease, no change, or an increase in coverage is 29 percent, 21 percent, and 19 percent, respectively. The increase in guidance for firms experiencing decrease in coverage is significantly higher than for firms experiencing increase in coverage.

[8] We are agnostic about whether managers would try to attract back the same analysts who dropped the firm, or try to attract a different group of analysts altogether.

[9] See http://www.niri.org/Other-Content/alerts/ea20031210.aspx

[10] Managers could also take actions to pre-empt a reduction in analyst coverage. However, such activity, if it exists, would work against finding a response to actual decreases in coverage. If managers do pre-empt successfully, then actual decreases in coverage are likely to be those cases for which additional guidance has not or would not have made a difference to analysts' decisions to drop coverage. Thus, we should observe weak/no response to actual decreases.

[11] Another benefit of guidance is to directly reduce information asymmetry and increase liquidity (King et al. 1990). However, prior research has shown that the impact of greater disclosure on liquidity is stronger for firms with higher analyst coverage than for firms with lower analyst coverage, as analysts help to process and interpret any information disclosed (Roulstone 2003). When analysts drop coverage, managers have incentives to increase guidance to both directly increase liquidity and to regain analysts to further magnify liquidity improvements.

In sum, managers' eventual decisions are based on the trade-off between the benefits from increasing guidance and the associated costs. To the extent that the intended benefit of increasing guidance is to retain new analysts (in the case of increased coverage) or to recoup analyst coverage (in the case of decreased coverage), this amounts to a trade-off between the benefit from the marginal analyst and the cost of issuing the marginal unit of guidance. Because this trade-off is unclear for the whole sample *ex ante*, the *average* guidance response to decreases and increases in analyst coverage becomes an empirical question.

Research Design

As many factors that affect analyst coverage also affect voluntary disclosure (often in the same direction), we use three research design features to rule out the explanation that changes in both guidance and coverage are driven by contemporaneous changes in the firms' environment. First, we focus on whether changes in analyst coverage are *followed* by changes in managerial guidance. Even though chronological ordering does not conclusively establish causality, observing that changes in coverage are followed by changes in guidance would suggest that changes in coverage are driving guidance decisions. Second, when examining the guidance response to changes in analyst coverage, we control for the underlying economic factors that affect changes in guidance. Third, in subsequent analyses, we separate out decreases in coverage that are driven largely by exogenous factors.

We model the guidance response to decreases and increases in coverage as follows:

$$\begin{aligned}\%\Delta GUIDE_{j,t+1} = {} & \beta_0 + a_1 * DEC_{j,t} + a_2 * INC_{j,t} + \beta_1 * \Delta SIZE_{j,t} + \beta_2 * \Delta EARN_{j,t} \\ & + \beta_3 * \Delta SALE_{j,t} + \beta_4 * \Delta LOSS_{j,t} + \beta_5 * \Delta MERGE_{j,t} + \beta_6 * \Delta EQUITY_{j,t} \\ & + \beta_7 * \Delta BTM_{j,t} + \beta_8 * \Delta CAPEX_{j,t} + \beta_9 * \Delta RDX_{j,t} + \beta_{10} * \Delta IO_{j,t} \\ & + \beta_{11} * \Delta EVOL_{j,t} + \beta_{12} * \Delta SPREAD_{j,t} + \beta_{13} * HHI_{j,t} + \beta_{14} * \Delta LITIGATE_{j,t} \\ & + \beta_{15} * \Delta WEALTH_{j,t} + \beta_{16} * \Delta\%CEOOWN_{j,t} + \beta_{17} * LAG\_\%\Delta GUIDE_{j,t} \\ & + \beta_{18} * GARS_{j,t} + \varepsilon_j. \end{aligned} \tag{1}$$

Our control variables are developed from the literature on the determinants of guidance. To capture the determinants of changes in guidance, we measure control variables in changes. Detailed variable definitions are in Appendix A.

Firm size is a primary determinant of disclosure (Waymire 1985; Kasznik and Lev 1995). Accordingly, we control for changes in the natural logarithm of the firm's market value ($\Delta SIZE$). We also control for changes in fundamental performance with year-on-year earnings growth ($\Delta EARN$), sales growth ($\Delta SALE$), and changes in firm status in terms of reporting losses ($\Delta LOSS$), as prior research shows that guidance is affected by fundamental performance.[12]

We also control for the demand for guidance. Higher institutional ownership (ΔIO) creates greater demand for public disclosure of performance (Bushee and Noe 2000). The demand for guidance is also likely to be higher when there is more information asymmetry between corporate insiders and market participants (Lansford et al. 2010). Growing firms tend to have more uncertainty about future prospects and consequently greater information asymmetry (Barth et al. 2001; Gintschel and Markov 2004). Accordingly, we control for growth prospects with M&A

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[12] The direction of the relationship is *ex ante* unclear. Theoretical models of disclosure predict that only firms whose performance exceeds a threshold will disclose (Verrecchia 1983). This theory predicts that disclosure is positively related to performance, and is supported by empirical evidence (Miller 2002). However, Skinner (1994) argues that firms voluntarily disclose bad news to mitigate legal liability, leading to the opposite prediction.

activity ($\Delta MERGE$), equity issuance ($\Delta EQUITY$), the book-to-market ratio (ΔBTM), capital expenditures ($\Delta CAPEX$), and R&D expenditures (ΔRDX). Waymire (1985) shows that information asymmetry is high when earnings are volatile ($\Delta EVOL$). Finally, we follow Coller and Yohn (1997) to directly capture information asymmetry using the annual mean bid-ask spread ($\Delta SPREAD$), computed in accordance with Jayaraman (2008).

We also control for factors that affect the supply of guidance. Proprietary costs deter voluntary disclosure (Verrecchia 1983). We capture proprietary costs (*HHI*) with industry concentration, calculated using the Herfindahl-Hirschman Index. Litigation costs also affect voluntary disclosure, albeit more ambiguously. Managers' incentives to reduce legal liability for poor performance increase their propensity to voluntarily disclose bad news (Skinner 1994). Rogers and Van Buskirk (2009), however, show that firms subject to high litigation risk provide less disclosure. We measure litigation risk at the firm level ($\Delta LITIGATE$) using the Rogers and Stocken (2005) technique. We also follow Nagar et al. (2003) and control for managerial stock-based incentives, using changes in the logarithm of the dollar value of CEO stockholdings in the firm ($\Delta WEALTH$) and in the proportion of firm shares held by the CEO ($\Delta\%CEOOWN$). As discussed in Nagar et al. (2003), greater managerial stock-based wealth should lead to greater willingness to disclose, while a higher proportion of firm shares held by insiders should reduce adverse selection problems in capital markets, thereby reducing the demand for public disclosure.

Finally, we control for time-series properties of guidance with lagged changes in guidance ($LAG\_\%\Delta GUIDE$). We also include an indicator variable for 2003 and onward for the Global Analyst Research Settlement (*GARS*), which fundamentally changed the equity research sector, and could have also affected guidance in turn. Table 1, Panel B describes the control variables.[13]

Table 2 displays the correlation matrix. Overall, changes in guidance ($\%\Delta GUIDE$) are insignificantly correlated with changes in analyst coverage ($\%\Delta COV$). However, they are significantly ($p < 0.01$) correlated with decreases in coverage (*DEC*), but not with increases in coverage (*INC*). Consistent with expectation, change in guidance is significantly positively correlated with change in size, M&A activities, equity issuance, institutional ownership, and managerial stock-based wealth, while negatively correlated with change in the proportion of insider ownership. Change in guidance, however, is negatively correlated with change in capital expenditures and bid-ask spreads, inconsistent with expectation.[14] On average, firms are less likely to issue guidance in the post-GARS period. The dependent variable $\%\Delta GUIDE$ has a significantly negative correlation with its own lag, suggesting mean reversion in guidance. Changes in analyst coverage are also significantly correlated with most control variables in directions consistent with prior research.

Results

We estimate Model (1) using OLS, with standard errors clustered at the firm level. Table 3, Panel A presents the results. The coefficient on *DEC* is 0.39, significant at $p < 0.01$, showing that decreases in analyst coverage are followed by a significant increase in guidance. The coefficient on *INC*, however, is much smaller at 0.04 and is insignificant ($p = 0.21$). The t-test for the difference

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[13] Our control variables are measured contemporaneously with change in analyst coverage. Initiating coverage is a complicated and time-consuming task, and analysts' coverage response to changes in firm characteristics may not be immediate, depending on firm complexity, analysts' familiarity with the industry, etc. However, additional analyses show that including past and longer lags of control variables does not affect the inferences. Moreover, the possibility that analysts may not immediately respond to changes in firm characteristics mitigates concerns of endogeneity.

[14] While these univariate correlations are inconsistent with prior research, $\%\Delta GUIDE$ is mostly insignificantly associated with both $\Delta CAPEX$ and $\Delta SPREAD$ in the regression analyses, suggesting that the negative correlations in Table 2 could be driven by correlated omitted variables. For example, Fang et al. (2009) show that firms with more liquid stocks (i.e., lower effective spreads) have better operating performance. If increases in spread are associated with declines in performance, then their ultimate impact on voluntary disclosure is unclear.

TABLE 2
Correlation Matrix

	$\%\Delta COV$	DEC	INC	$\%\Delta GUIDE$
DEC	−0.510***			
INC	0.961***	−0.253***		
$\%\Delta GUIDE$	−0.006	0.057***	0.012	
$\Delta SIZE$	0.222***	−0.185***	0.190***	0.057***
$\Delta EARN$	0.097***	−0.045***	0.098***	0.019
$\Delta SALE$	0.100***	−0.102***	0.080***	0.001
$\Delta LOSS$	−0.040***	0.061***	−0.026*	−0.008
$\Delta MERGE$	0.033**	−0.034**	0.026*	0.026*
$\Delta EQUITY$	0.145***	−0.084***	0.136***	0.050***
ΔBTM	−0.099***	0.101***	−0.079***	−0.020
$\Delta CAPEX$	0.038**	−0.076***	0.019	−0.035**
ΔRDX	0.019	−0.043***	0.008	0.006
ΔIO	0.186***	−0.074***	0.185***	0.050***
$\Delta EVOL$	0.007	−0.019	0.001	0.015
$\Delta SPREAD$	−0.113***	0.030**	−0.118***	−0.059***
HHI	0.001	−0.024	−0.007	0.008
$\Delta LITIGATE$	0.040***	−0.026*	0.037**	−0.012
$\Delta WEALTH$	0.053***	−0.028*	0.050***	0.038**
$\Delta\%CEOOWN$	−0.010	0.001	−0.011	−0.049***
$LAG\_\%\Delta GUIDE$	0.082***	−0.002	0.091***	−0.176***
$GARS$	0.071***	−0.160***	0.028*	−0.076***

*, **, *** Indicate two-tailed statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
The sample is based on 4,515 firm-years during 2001–2005. See Appendix A for detailed variable definitions.

between the coefficients is significant at $p < 0.01$. Change in guidance is positively associated with change in size, sales growth, M&A activity, and managerial stock-based wealth, while negatively associated with change in the percentage of insider ownership, lagged change in guidance, and *GARS*. The negative and significant coefficient on lagged change in guidance reflects mean reversion in guidance levels; firms that increase guidance are, on average, more likely to decrease subsequently and *vice versa*.

Our results show that managers faced with dwindling analyst coverage are willing to expend resources and increase communication to reverse the declining trend of coverage, implying that managers perceive analyst coverage to be valuable. We do not find any significant guidance response to increases in analyst coverage, on average.

Decomposing Decreases in Coverage

To further understand managers' guidance response, we separate out from overall decreases in coverage the component that is driven by downsizing of brokerage houses (or research firms).[15] We focus on this decomposition for several reasons. First, losses of coverage driven by structural changes in the brokerage industry are likely to be exogenous to each firm, helping us to isolate a

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[15] Similar to Yu (2008), we only estimate exogenous decreases but not exogenous increases of coverage due to theoretical and practical difficulties in estimating the latter.

TABLE 3

Managers' Responses to Changes in Analyst Coverage

Panel A: Model (1) (n = 4,515)

	Estimate	Std. Error
DEC	0.388	0.124***
EXOG_DEC		
OTHER_DEC		
INC	0.041	0.033
ΔSIZE	0.152	0.045***
ΔEARN	0.038	0.137
ΔSALE	0.088	0.053*
ΔLOSS	−0.020	0.039
ΔMERGE	0.045	0.026*
ΔEQUITY	0.449	0.426
ΔBTM	0.037	0.032
ΔCAPEX	−0.758	0.559
ΔRDX	0.324	0.328
ΔIO	0.179	0.155
ΔEVOL	0.062	0.044
ΔSPREAD	−6.169	4.930
HHI	0.025	0.082
ΔLITIGATE	0.026	0.054
ΔWEALTH	0.034	0.017*
Δ%CEOOWN	−0.378	0.039***
LAG_%ΔGUIDE	−0.153	0.009***
GARS	−0.269	0.041***
Constant	0.371	0.052***
Adjusted R^2	6.4%	
	INC = *DEC*, p = 0.00	

Panel B: Model (2) (n = 4,008)

	Estimate	Std. Error
DEC		
EXOG_DEC	0.268	0.095***
OTHER_DEC	0.188	0.110*
INC	0.043	0.038
ΔSIZE	0.158	0.060***
ΔEARN	0.085	0.152
ΔSALE	0.076	0.059
ΔLOSS	−0.037	0.042
ΔMERGE	0.052	0.027*
ΔEQUITY	0.656	0.499
ΔBTM	0.055	0.104
ΔCAPEX	−0.836	0.602
ΔRDX	0.226	0.347
ΔIO	0.029	0.162
ΔEVOL	0.068	0.045

(continued on next page)

TABLE 3 (continued)

	Estimate	Std. Error
$\Delta SPREAD$	−4.361	5.541
HHI	0.041	0.088
$\Delta LITIGATE$	0.034	0.056
$\Delta WEALTH$	0.027	0.018
$\Delta \%CEOOWN$	−0.395	0.044***
$LAG\_\%\Delta GUIDE$	−0.146	0.010***
$GARS$	−0.290	0.043***
Constant	0.385	0.053***
Adjusted R^2	6.2%	

$EXOG\_DEC = OTHER\_DEC$, $p = 0.26$
$EXOG\_DEC = INC$, $p = 0.01$
$OTHER\_DEC = INC$, $p = 0.18$

*, **, *** Indicate two-tailed statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Standard errors are clustered by firm.
The sample is based on 4,515 firm-years for 2001–2005. See Appendix A for all other variable definitions.

Variable Definitions:
$\%\Delta GUIDE$ = dependent variable, which is $(GUIDE2 - GUIDE1)/GUIDE1$;
$DEC = |\%\Delta COV|$ if $COV1 > COV2$, and 0 otherwise;
$INC = |\%\Delta COV|$ if $COV2 > COV1$, and 0 otherwise;
$EXOG\_DEC_t = (COV1_{it} - ExpectedCoverage_{it})/COV1_{it}$; and
$OTHER\_DEC_{it} = (ExpectedCoverage_{it} - COV2_{it})/COV1_{it}$.

cleaner cause-and-effect relationship between the loss of coverage and the subsequent guidance response (Kelly and Ljungqvist 2007; Hong and Kacperczyk 2010).[16] Second, market developments and new regulations have dramatically changed the landscape of sell-side research. Declining trading volumes following the dot-com bubble and the Global Analyst Research Settlement of 2003 were serious blows to the industry, leading to downsizing of research departments (Hong and Kacperczyk 2010). It is interesting to examine how individual firms respond to these industry-wide events that affect their information environment. Finally, decreases in coverage could be driven by other factors, such as deterioration in the economic prospects of the firm (McNichols and O'Brien 1997; Khorana et al. 2010) or in the attractiveness of the firm as a potential investment-banking client (Shon and Young 2008). However, these factors are endogenous to the underlying conditions of the firm and highly correlated with each other, making them more difficult to disentangle.

To estimate the exogenous component of coverage decreases, we use a modified version of a procedure developed by Yu (2008). Suppose firm i is covered in year t−1 by j brokerage firms. Assuming that each brokerage firm allocates the same proportion of its resources to covering firm i in year t, the expected coverage of firm i from brokerage firm j in year t is:[17]

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[16] We acknowledge that even such a coverage decrease need not be purely exogenous. When a brokerage firm downsizes research staff, it could re-allocate analysts to firms based on their fundamental attractiveness. However, such decreases are stimulated by events not specific to any particular firm, making them more exogenous than decreases in coverage that are, say, due to poor fundamentals, which are specific to the firm. See also Yu (2008).

[17] Yu (2008) uses a fixed year (1995) as the benchmark year for modeling expected coverage. We modify Yu's (2008) assumption by using the previous year, i.e., year t−1 as the benchmark year for modeling expected coverage because using a fixed year could lead to stale estimates of expected coverage. We also calculate our measure with the Yu (2008) fixed-benchmark assumption and the statistical inferences are unchanged.

$$ExpectedCoverage_{ijt} = Min[(BrokerSize_{jt}/BrokerSize_{jt-1}) * Coverage_{ijt-1}, 1].$$

$ExpectedCoverage_{ijt}$ is the expected allocation of analysts to firm i by brokerage firm j in year t. $BrokerSize_{jt}$ is the total size of the brokerage firm j (i.e., the total number of analysts employed by brokerage firm j in year t). $Coverage_{ijt-1}$ is the actual allocation of analysts to firm i by brokerage firm j in year $t-1$ (i.e., the previous year). Following Yu (2008), we constrain expected coverage to be at most 1, as brokerage firms rarely have more than one analyst covering the same stock. The expected coverage of firm i in year t is therefore:

$$ExpectedCoverage_{it} = \Sigma_j ExpectedCoverage_{ijt}.$$

Using this procedure, we decompose total decreases in coverage into downsizing-driven decreases versus other decreases (only for firms with an overall decrease in analyst coverage):

$$EXOG\_DEC_{it} = (COV1_{it} - ExpectedCoverage_{it})/COV1_{it}.$$

$$OTHER\_DEC_{it} = (ExpectedCoverage_{it} - COV2_{it})/COV1_{it}.$$

Having decomposed decreases in coverage, we estimate a modified Model (1) where we replace *DEC* with *EXOG_DEC* and *OTHER_DEC* (Model 2). The results, displayed in Table 3, Panel B, show that the strong guidance response to decreases in coverage evident from Panel A is driven by the response to downsizing-related decreases. The coefficient on *EXOG_DEC* is 0.27 and is statistically significant at $p < 0.01$, while the coefficient on *OTHER_DEC* is not only smaller at 0.19, but also less significant ($p = 0.09$). The t-test for the difference between the two components, however, is insignificant at conventional levels ($p = 0.26$).

These results offer several implications. First, they allow us to draw a stronger inference on the cause-and-effect relation between loss of coverage and the subsequent guidance response, as downsizing of brokerage houses is largely exogenous. Second, even if firms retain a proportionate share of the analyst industry, managers still have incentives to regain lost coverage because each analyst brings unique benefits to the firm, such as access to a particular investor clientele. The results show that managers' actions are consistent with their perceiving certain types of coverage losses as being more reversible—i.e., those driven by factors external to their firm. If the loss of coverage is more endogenous, for instance due to deteriorating firm prospects, we observe a smaller guidance response from managers. This could reflect the correspondingly greater costs of disclosure for such firms, or imply that more disclosure is not an effective substitute for the fundamental attractiveness of the stock as far as regaining analysts is concerned.

IV. MANAGERS' RESPONSES TO CHANGES IN ANALYST COVERAGE: CROSS-SECTIONAL ANALYSES

Because managers' responses should reflect the trade-off between the marginal benefits of analyst coverage and the marginal costs of providing more guidance, we now identify firm and analyst characteristics that we expect are related to the marginal value of analyst coverage or the marginal cost of providing guidance, and examine whether the managerial response to decreases and increases in coverage varies with these characteristics.[18]

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[18] We also examine the effect of the Global Analyst Research Settlements (GARS) by performing our analyses separately for periods before and after GARS. Given that managers are more likely to respond to exogenous decreases in analyst coverage as shown in Section III, we expect that the results would be stronger for the post-GARS period when there are greater exogenous shifts in the brokerage industry. The results are consistent with this prediction.

Growth

Growing firms have more inherent uncertainty in future prospects and greater information asymmetry (Hutton 2005; Aslan et al. 2008), possibly because growth options are more difficult to value than assets in place (Gintschel and Markov 2004). Analysts' role in improving informational efficiency could, therefore, be more crucial for these firms. Hence, we expect analyst coverage to be more valuable for growing firms than for mature firms, and that managers of growing firms are more likely to respond to changes in analyst coverage.

We partition the sample into two subsamples by sales growth over year *t* ($\Delta SALE$) and estimate Models (1) and (2) separately for each subsample. The low (high) growth firms have mean year-on-year sales growth of −3.0 percent (27.0 percent).

The results, presented in Table 4, are consistent with the full sample results for both subsamples. While the significant response to decreases in Panel A and to exogenous decreases in Panel B is larger in magnitude for the high growth group than for the low growth group, untabulated tests show that the difference is insignificant ($p = 0.71$ for Panel A and $p = 0.67$ for Panel B). Our results, therefore, show a similar response to changes in analyst coverage for firms with varying sales growth. A potential explanation arises from disclosure costs. When profitable new potential investments and growth opportunities exist, managers could be less willing to voluntarily disclose information that dissipates the value of these opportunities (Bamber and Cheon 1998; Ajinkya et al. 2005). Accordingly, higher proprietary disclosure costs for growing firms could offset their propensity to increase guidance (relative to low growth firms), following decreases in analyst coverage. On the other hand, low growth firms are inherently less attractive to analysts due to their lower potential to be investment banking clients; these firms could therefore have stronger incentives to increase disclosure in order to attract analyst coverage.

Equity Issuance

Firms raising equity are likely to be in particular need of analyst coverage. Visibility with investors is a primary concern for managers of these firms (Bushee and Miller 2012), as an improved information environment translates directly into lower cost of equity (Krigman et al. 2001; Bowen et al. 2008). Therefore, we expect the guidance response to changes in analyst coverage to be stronger for firms engaging in equity issuance activities.

We partition the sample into two subsamples by the magnitude of current (year *t*) and one-year-ahead (year *t*+1) equity issuances. If this magnitude is greater (less) than 1 percent,[19] we classify firms into the high (low) equity issuance group. The mean equity issuance for the high (low) group is 4 percent (0.4 percent) of lagged market value. Table 5, Panel A presents the results of estimating Model (1) for each subsample. As predicted, the magnitude of the response to decreases in analyst coverage is much higher for the high equity issuance group than for the low equity issuance group (0.45 versus 0.24), and is significant only in the high equity issuance group ($p < 0.01$). Decomposing decreases in coverage in Panel B does not change any implications for the low equity issuance group, but shows that the strong response to decreases in coverage among high equity issuance firms is driven by the response to downsizing-related decreases. The coefficient on *INC* remains insignificant throughout. These results support the hypothesis that managers view analyst coverage as more valuable when they engage in equity issuance activities.

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[19] We use 1 percent cutoff instead of 0 percent because very few observations in Compustat have zero equity issuance, probably because of small transactions such as employee stock option exercises. The median equity issuance of the sample is 0.8 percent. Therefore we choose 1 percent as the cutoff to strike a balance between getting an economically significant equity issuance and not skewing the subsample sizes too much.

TABLE 4

Managers' Responses to Changes in Analyst Coverage Role of Sales Growth

Panel A: Model (1)

	High Sales Growth (n = 2,261)		Low Sales Growth (n = 2,254)	
	Estimate	Std. Error	Estimate	Std. Error
DEC	0.406	0.183**	0.360	0.161**
INC	0.036	0.042	0.030	0.039
ΔSIZE	0.219	0.075***	0.097	0.056*
ΔEARN	−0.148	0.139	0.181	0.241
ΔSALE	0.030	0.070	−0.050	0.171
ΔLOSS	−0.044	0.053	−0.004	0.052
ΔMERGE	0.044	0.036	0.044	0.039
ΔEQUITY	0.633	0.646	0.127	0.404
ΔBTM	0.150	0.134	0.007	0.033
ΔCAPEX	−0.809	0.498	−0.745	1.220
ΔRDX	0.169	0.322	0.577	1.432
ΔIO	0.129	0.189	0.217	0.261
ΔEVOL	0.099	0.045**	−0.045	0.106
ΔSPREAD	−12.337	7.864	−0.922	6.389
HHI	−0.066	0.117	0.118	0.124
ΔLITIGATE	0.048	0.078	−0.012	0.074
ΔWEALTH	0.057	0.020***	0.023	0.028
Δ%CEOOWN	−0.390	0.035***	−0.896	1.767
LAG_%ΔGUIDE	−0.155	0.015***	−0.157	0.017***
GARS	−0.332	0.062***	−0.183	0.068***
Constant	0.426	0.083***	0.314	0.068***
Adjusted R^2	8.6%		5.0%	
INC = *DEC*	p = 0.03		p = 0.03	

Panel B: Model (2)

	High Sales Growth (n = 2,016)		Low Sales Growth (n = 1,992)	
	Estimate	Std. Error	Estimate	Std. Error
EXOG_DEC	0.305	0.160*	0.262	0.113**
OTHER_DEC	0.290	0.203	0.134	0.128
INC	0.024	0.048	0.044	0.041
ΔSIZE	0.210	0.072***	0.042	0.079
ΔEARN	−0.118	0.139	0.268	0.279
ΔSALE	0.027	0.077	−0.080	0.199
ΔLOSS	−0.055	0.060	−0.025	0.058
ΔMERGE	0.062	0.038	0.044	0.040
ΔEQUITY	0.908	0.811	0.303	0.252
ΔBTM	0.216	0.127*	−0.112	0.113
ΔCAPEX	−0.668	0.483	−1.166	1.429

(continued on next page)

TABLE 4 (continued)

	High Sales Growth (n = 2,016)		Low Sales Growth (n = 1,992)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
ΔRDX	0.032	0.342	0.802	1.565
ΔIO	0.008	0.189	−0.024	0.285
$\Delta EVOL$	0.104	0.046**	−0.046	0.106
$\Delta SPREAD$	−17.556	9.215*	6.000	6.723
HHI	0.001	0.127	0.072	0.134
$\Delta LITIGATE$	0.052	0.080	0.002	0.078
$\Delta WEALTH$	0.052	0.021**	0.032	0.034
$\Delta\%CEOOWN$	−0.400	0.040***	−1.646	2.187
$LAG\_\%\Delta GUIDE$	−0.148	0.016***	−0.150	0.018***
$GARS$	−0.333	0.055***	−0.199	0.073***
Constant	0.408	0.073***	0.336	0.079***
Adjusted R^2	8.9%		4.9%	
$EXOG\_DEC = OTHER\_DEC$	$p = 0.89$		$p = 0.18$	
$EXOG\_DEC = INC$	$p = 0.07$		$p = 0.04$	
$OTHER\_DEC = INC$	$p = 0.19$		$p = 0.47$	

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*, **, *** Indicate two-tailed statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Standard errors are clustered by firm.

The sample is based on 4,515 firm-years for 2001–2005. Partitions are based on $\Delta SALE$, the year-on-year sales growth for year t. See Appendix A for all other variable definitions.

Variable Definitions:
$\%\Delta GUIDE$ = dependent variable, which is $(GUIDE2 - GUIDE1)/GUIDE1$;
$DEC = |\%\Delta COV|$ if $COV1 > COV2$, and 0 otherwise;
$INC = |\%\Delta COV|$ if $COV2 > COV1$, and 0 otherwise;
$EXOG\_DEC_i = (COV1_{it} - ExpectedCoverage_{it})/COV1_{it}$; and
$OTHER\_DEC_{it} = (ExpectedCoverage_{it} - COV2_{it})/COV1_{it}$.

Liquidity

Firms seeking to gain investor attention are often hampered by lack of liquidity for their stock. Greater analyst coverage brings substantial liquidity benefits to the firm, especially for illiquid firms (Roulstone 2003; Rana 2008). Therefore, we hypothesize that the marginal benefit of analyst coverage is greater for firms with low stock liquidity, and expect the guidance response to changes in analyst coverage to be stronger for firms with illiquid stocks.

We partition the sample into two subsamples by the annual mean bid-ask spread for year t (*SPREAD*). The high (low) spread group has mean *SPREAD* of 0.71 percent (0.21 percent). Table 6, Panel A presents the results from estimating Model (1) for each subsample. In the high spread (low liquidity) subsample, the coefficient on *DEC* is 0.39, significant at $p < 0.05$. In the high liquidity subsample, the coefficient on *DEC* is smaller at 0.34 and is significant at $p = 0.08$. Untabulated tests show that the difference in the coefficient on *DEC* between the subsamples is not statistically significant ($p = 0.90$); it is, however, significant in the post-GARS period ($p = 0.08$). The differences between the two groups are starker in Panel B based on Model (2). While the magnitude of the coefficient on *EXOG_DEC* is similar across both groups, only the response within the low liquidity (high spread) group is statistically significant ($p = 0.05$). The response to other decreases, and to increases in coverage, is insignificant. Overall, the results support the expectation

TABLE 5

Managers' Responses to Changes in Analyst Coverage
Role of Equity Offering

Panel A: Model (1)

	High Equity Issuance (n = 2,803)		Low Equity Issuance (n = 1,712)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
DEC	0.451	0.168***	0.238	0.177
INC	0.052	0.039	−0.059	0.052
ΔSIZE	0.100	0.070	0.097	0.074
ΔEARN	−0.007	0.156	0.234	0.198
ΔSALE	0.081	0.060	0.104	0.116
ΔLOSS	0.005	0.046	−0.062	0.065
ΔMERGE	0.067	0.035*	0.006	0.040
ΔEQUITY	0.706	0.471	−0.731	0.636
ΔBTM	−0.112	0.097	0.062	0.033*
ΔCAPEX	−0.689	0.793	−0.841	0.721
ΔRDX	0.370	0.478	0.568	0.483
ΔIO	0.139	0.168	0.194	0.369
ΔEVOL	0.048	0.074	0.078	0.039**
ΔSPREAD	−2.551	6.238	−11.241	7.598
HHI	−0.056	0.108	0.180	0.133
ΔLITIGATE	0.036	0.069	0.015	0.084
ΔWEALTH	0.039	0.026	0.026	0.020
Δ%CEOOWN	−0.158	0.077**	−0.594	0.030***
LAG_%ΔGUIDE	−0.152	0.013***	−0.155	0.019***
GARS	−0.278	0.059***	−0.267	0.058***
Constant	0.413	0.072***	0.308	0.069***
Adjusted R^2	6.3%		8.0%	
DEC = INC	p = 0.01		p = 0.07	

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Panel B: Model (2)

	High Equity Issuance (n = 2,475)		Low Equity Issuance (n = 1,533)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
EXOG_DEC	0.284	0.118**	0.207	0.148
OTHER_DEC	0.165	0.136	0.188	0.175
INC	0.059	0.044	−0.079	0.053
ΔSIZE	0.070	0.071	0.194	0.097**
ΔEARN	0.070	0.174	0.235	0.197
ΔSALE	0.075	0.066	0.092	0.124
ΔLOSS	0.001	0.053	−0.078	0.069
ΔMERGE	0.097	0.037***	−0.024	0.042
ΔEQUITY	0.838	0.577	0.029	0.417
ΔBTM	−0.172	0.108	0.211	0.129*
ΔCAPEX	−0.825	0.828	−0.626	0.744

(continued on next page)

TABLE 5 (continued)

	High Equity Issuance (n = 2,475)		Low Equity Issuance (n = 1,533)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
ΔRDX	0.513	0.486	0.237	0.607
ΔIO	−0.004	0.172	0.137	0.410
$\Delta EVOL$	0.050	0.074	0.090	0.042**
$\Delta SPREAD$	−5.243	7.543	−3.234	6.801
HHI	−0.041	0.121	0.183	0.137
$\Delta LITIGATE$	0.036	0.071	0.016	0.089
$\Delta WEALTH$	0.033	0.028	0.020	0.021
$\Delta\%CEOOWN$	−0.182	0.094*	−0.613	0.028***
$LAG\_\%\Delta GUIDE$	−0.146	0.015***	−0.146	0.020***
$GARS$	−0.279	0.061***	−0.312	0.061***
Constant	0.404	0.073***	0.369	0.073***
Adjusted R^2	6.2%		7.6%	
$EXOG\_DEC = OTHER\_DEC$	$p = 0.20$		$p = 0.86$	
$EXOG\_DEC = INC$	$p = 0.04$		$p = 0.04$	
$OTHER\_DEC = INC$	$p = 0.42$		$p = 0.12$	

*, **, *** Indicate two-tailed statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Standard errors are clustered by firm.

The sample is based on 4,515 firm-years for 2001–2005. Partitions are based on *EQUITY*, equity issuance from year *t* or *t*+1 scaled by lagged market value. See Appendix A for all other variable definitions.

Variable Definitions:
$\%\Delta GUIDE$ = dependent variable, which is $(GUIDE2 - GUIDE1)/GUIDE1$;
$DEC = |\%\Delta COV|$ if $COV1 > COV2$, and 0 otherwise;
$INC = |\%\Delta COV|$ if $COV2 > COV1$, and 0 otherwise;
$EXOG\_DEC_t = (COV1_{it} - ExpectedCoverage_{it})/COV1_{it}$; and
$OTHER\_DEC_{it} = (ExpectedCoverage_{it} - COV2_{it})/COV1_{it}$.

that managers of illiquid firms view analyst coverage as more valuable, and are more willing to expend resources to regain coverage.

Prevailing Disclosure Level

We next partition the sample by the prevailing guidance level. We expect that the marginal benefit of issuing additional guidance decreases with the current guidance level, because firms with low guidance are likely to have higher information asymmetry, making the marginal unit of guidance more valuable (Lansford et al. 2010). The marginal cost of providing more guidance is also likely to be higher at high guidance levels. For example, a firm that already provides quarterly earning guidance and revenue guidance will face a high cost for expanding guidance further (e.g., disaggregating forecasts into operating expense forecasts), as it will have to reveal potentially proprietary information about its operating structure or strategy, which also reduces flexibility in achieving targets (Hirst et al. 2007). Hence, we expect the response to changes in coverage to be stronger in firms currently providing relatively low disclosure.

Accordingly, we partition the sample by the current level of guidance (*GUIDE1*) and estimate Models (1) and (2) separately for each subsample. The mean guidance for the high (low) guidance group is 9.27 (3.08). The results in Table 7 are consistent with expectations. Panel A shows that the significant increase in disclosure subsequent to decreases in coverage is evident only in low

TABLE 6

Managers' Responses to Changes in Analyst Coverage
Role of Liquidity

Panel A: Model (1)

	High Bid-Ask Spread (n = 2,319)		Low Bid-Ask Spread (n = 2,196)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
DEC	0.387	0.165**	0.339	0.195*
INC	0.055	0.048	0.001	0.043
ΔSIZE	0.142	0.070**	0.097	0.074
ΔEARN	0.133	0.211	−0.076	0.146
ΔSALE	0.140	0.098	0.062	0.062
ΔLOSS	0.047	0.049	−0.167	0.061***
ΔMERGE	0.045	0.039	0.050	0.036
ΔEQUITY	0.524	0.508	0.123	0.338
ΔBTM	0.044	0.031	−0.162	0.143
ΔCAPEX	−0.890	0.855	−0.507	0.562
ΔRDX	2.550	1.447*	0.229	0.364
ΔIO	0.235	0.233	0.040	0.196
ΔEVOL	0.017	0.040	0.126	0.102
ΔSPREAD	−4.284	5.759	−15.245	10.539
HHI	0.032	0.130	0.018	0.106
ΔLITIGATE	0.035	0.083	0.021	0.070
ΔWEALTH	0.057	0.031*	0.011	0.020
Δ%CEOOWN	−0.400	0.041***	−0.069	0.748
LAG_%ΔGUIDE	−0.158	0.013***	−0.146	0.014***
GARS	−0.258	0.068***	−0.288	0.048***
Constant	0.365	0.089***	0.380	0.055***
Adjusted R^2	6.6%		7.1%	
DEC = INC	p = 0.03		p = 0.06	

Panel B: Model (2)

	High Bid-Ask Spread (n = 1,976)		Low Bid-Ask Spread (n = 2,032)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
EXOG_DEC	0.245	0.124**	0.256	0.181
OTHER_DEC	0.144	0.096	0.211	0.260
INC	0.058	0.059	0.003	0.042
ΔSIZE	0.199	0.088**	0.036	0.076
ΔEARN	0.198	0.249	−0.040	0.148
ΔSALE	0.073	0.115	0.093	0.064
ΔLOSS	0.029	0.054	−0.169	0.065***
ΔMERGE	0.036	0.040	0.071	0.036**
ΔEQUITY	0.773	0.607	0.050	0.373
ΔBTM	0.126	0.111	−0.298	0.140**
ΔCAPEX	−0.964	0.902	−0.507	0.622

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TABLE 6 (continued)

	High Bid-Ask Spread (n = 1,976)		Low Bid-Ask Spread (n = 2,032)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
ΔRDX	2.989	1.744*	0.066	0.371
ΔIO	−0.015	0.238	0.027	0.214
$\Delta EVOL$	0.018	0.043	0.122	0.104
$\Delta SPREAD$	−1.225	6.354	−15.734	11.534
HHI	0.022	0.154	0.058	0.108
$\Delta LITIGATE$	0.040	0.083	0.026	0.074
$\Delta WEALTH$	0.049	0.034	0.018	0.020
$\Delta\%CEOOWN$	−0.410	0.045***	−0.897	0.637
$LAG\_\%\Delta GUIDE$	−0.146	0.014***	−0.148	0.015***
$GARS$	−0.282	0.073***	−0.301	0.053***
Constant	0.395	0.093***	0.383	0.060
Adjusted R^2	6.2%		7.4%	
$EXOG\_DEC = OTHER\_DEC$	p = 0.27		p = 0.72	
$EXOG\_DEC = INC$	p = 0.08		p = 0.14	
$OTHER\_DEC = INC$	p = 0.37		p = 0.41	

*, **, *** Indicate two-tailed statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Standard errors are clustered by firm.

The sample is based on 4,515 firm-years for 2001–2005. Partitions are based on *SPREAD* in year *t*, the level of the bid-ask spread. See Appendix A for all other variable definitions.

Variable Definitions:
$\%\Delta GUIDE$ = dependent variable, which is $(GUIDE2 - GUIDE1)/GUIDE1$;
$DEC = |\%\Delta COV|$ if $COV1 > COV2$, and 0 otherwise;
$INC = |\%\Delta COV|$ if $COV2 > COV1$, and 0 otherwise;
$EXOG\_DEC_i = (COV1_{it} - ExpectedCoverage_{it})/COV1_{it}$; and
$OTHER\_DEC_{it} = (ExpectedCoverage_{it} - COV2_{it})/COV1_{it}$.

guidance firms (p = 0.02), while Panel B shows that this response is driven by the response to downsizing-related coverage decreases (p = 0.051). The response to other decreases, and to increases in coverage, is insignificant in all subsamples.

These results suggest that managers view the benefits of increasing guidance relative to costs as higher when their current guidance level is low. To the extent that the current guidance level is correlated with the reasons for analysts dropping coverage in the first place, our results also suggest that managers are more likely to respond to decreases in analyst coverage when analysts' termination decisions are likely to be associated with lack of guidance.

Resulting Level of Coverage

Prior research suggests that the marginal value of analyst coverage declines as the firm becomes more heavily covered. For example, coverage initiation by an analyst produces a smaller positive stock reaction in heavily followed firms *vis-à-vis* thinly followed firms (Branson et al. 1998). If the value of analysts as perceived by managers also declines as the firm becomes more heavily covered, the guidance response to decreases in coverage should be stronger for firms that become thinly covered after the change.

We partition the sample into two subsamples along the level of analyst coverage at the end of year *t* (*COV2*) and estimate Model (1) and (2) separately by subsample. Low (high) coverage firms

TABLE 7
Managers' Responses to Changes in Analyst Coverage
Role of Prevailing Disclosure Level

Panel A: Model (1)

	Low Guidance (n = 2,013)		High Guidance (n = 2,502)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
DEC	0.477	0.208**	−0.021	0.066
INC	0.056	0.061	0.002	0.015
ΔSIZE	0.223	0.095**	0.156	0.028***
ΔEARN	−0.029	0.207	0.058	0.062
ΔSALE	0.258	0.097***	−0.018	0.033
ΔLOSS	−0.074	0.068	−0.036	0.027
ΔMERGE	0.072	0.051	0.036	0.018**
ΔEQUITY	0.855	0.756	−0.113	0.111
ΔBTM	0.119	0.125	0.028	0.014**
ΔCAPEX	−1.481	1.319	0.161	0.251
ΔRDX	0.448	0.622	0.478	0.385
ΔIO	0.265	0.298	0.028	0.108
ΔEVOL	0.085	0.060	0.114	0.044**
ΔSPREAD	−8.414	7.808	3.974	2.090*
HHI	0.154	0.160	0.007	0.042
ΔLITIGATE	0.058	0.105	−0.024	0.032
ΔWEALTH	0.059	0.037	0.010	0.010
Δ%CEOOWN	−0.435	0.053***	−0.324	0.124***
LAG_%ΔGUIDE	−0.344	0.027***	−0.022	0.006***
GARS	−0.416	0.081***	−0.116	0.022***
Constant	0.737	0.097***	0.030	0.027
Adjusted R^2	9.7%		3.8%	
DEC = INC	p = 0.04		p = 0.73	

Panel B: Model (2)

	Low Guidance (n = 1,765)		High Guidance (n = 2,243)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
EXOG_DEC	0.382	0.196*	−0.002	0.060
OTHER_DEC	0.282	0.266	0.012	0.073
INC	0.067	0.062	−0.004	0.017
ΔSIZE	0.219	0.097**	0.133	0.035***
ΔEARN	0.085	0.247	0.080	0.062
ΔSALE	0.252	0.101**	−0.006	0.033
ΔLOSS	−0.090	0.074	−0.032	0.029
ΔMERGE	0.091	0.053*	0.032	0.019*
ΔEQUITY	1.511	0.938	−0.143	0.128
ΔBTM	0.142	0.131	−0.012	0.052
ΔCAPEX	−1.643	1.347	0.158	0.269

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TABLE 7 (continued)

	Low Guidance (n = 1,765)		High Guidance (n = 2,243)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
ΔRDX	0.050	0.587	0.615	0.327*
ΔIO	−0.070	0.301	0.034	0.113
$\Delta EVOL$	0.101	0.061*	0.123	0.042***
$\Delta SPREAD$	−5.815	9.859	3.106	2.487
HHI	0.169	0.177	0.017	0.056
$\Delta LITIGATE$	0.081	0.111	−0.044	0.034
$\Delta WEALTH$	0.050	0.038	0.008	0.010
$\Delta\%CEOOWN$	−0.462	0.061***	−0.295	0.130**
$LAG\_\%\Delta GUIDE$	−0.328	0.030***	−0.019	0.006***
$GARS$	−0.449	0.086***	−0.125	0.023***
Constant	0.759	0.099***	0.046	0.028
Adjusted R^2	9.9%		3.9%	
$EXOG\_DEC = OTHER\_DEC$	p = 0.51		p = 0.74	
$EXOG\_DEC = INC$	p = 0.10		p = 0.98	
$OTHER\_DEC = INC$	p = 0.42		p = 0.83	

*, **, *** Indicate two-tailed statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Standard errors are clustered by firm.

The sample is based on 4,515 firm-years for 2001–2005. Partitions are based on *GUIDE1*, the level of guidance in year *t*. See Appendix A for all other variable definitions.

Variable Definitions:
$\%\Delta GUIDE$ = dependent variable, which is $(GUIDE2 - GUIDE1)/GUIDE1$;
$DEC = |\%\Delta COV|$ if $COV1 > COV2$, and 0 otherwise;
$INC = |\%\Delta COV|$ if $COV2 > COV1$, and 0 otherwise;
$EXOG\_DEC_t = (COV1_{it} - ExpectedCoverage_{it})/COV1_{it}$; and
$OTHER\_DEC_{it} = (ExpectedCoverage_{it} - COV2_{it})/COV1_{it}$.

have mean resulting coverage of 3.96 (13.99). Table 8 presents the results. Consistent with expectation, in Panel A we find that the positive guidance response to decreases in coverage is significant only for thinly covered firms (p = 0.012). In Panel B, we find a significant response to downsizing-driven decreases only for thinly covered firms (p = 0.05). We find an even stronger separation in the response to other decreases, with thinly covered firms increasing guidance and highly covered firms actually reducing guidance. In both panels, highly covered firms respond to increases in coverage by reducing guidance, although the response is significant only in Panel A (p = 0.08).[20]

Overall, the results in Table 8 suggest the existence of a targeted level of coverage that managers try to maintain for their firms. As long as coverage is above this "threshold," managers do not respond even if some analysts drop coverage of the firm. When firms have successfully attracted high (and increasing) coverage, there is even some evidence that managers cut back on guidance, potentially because having very high coverage does not bring sufficient benefits to justify the costs of maintaining a high level of disclosure.

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[20] Because the guidance response to decreases in coverage is concentrated within those firms with low current disclosure or low resulting coverage, we further partition the "low disclosure" and "low resulting coverage" subsamples based on cross-sectional characteristics including growth, equity issuance, and liquidity. These "nested" analyses yield results very similar to those documented in Tables 4–6.

TABLE 8

Managers' Responses to Changes in Analyst Coverage
Role of Resulting Coverage

Panel A: Model (1)

	Low Resulting Coverage (n = 2,103)		High Resulting Coverage (n = 2,412)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
DEC	0.418	0.166**	0.075	0.176
INC	0.075	0.047	−0.054	0.031*
ΔSIZE	0.121	0.080	0.164	0.063***
ΔEARN	0.104	0.231	−0.046	0.135
ΔSALE	0.100	0.087	0.090	0.065
ΔLOSS	−0.075	0.058	0.013	0.050
ΔMERGE	0.070	0.043	0.017	0.031
ΔEQUITY	0.852	0.576	−0.385	0.331
ΔBTM	0.040	0.031	−0.011	0.123
ΔCAPEX	−1.175	0.932	−0.176	0.553
ΔRDX	1.152	1.115	0.225	0.370
ΔIO	0.151	0.242	0.150	0.207
ΔEVOL	0.080	0.031***	0.018	0.126
ΔSPREAD	−4.922	6.295	−6.983	6.573
HHI	−0.031	0.128	0.086	0.107
ΔLITIGATE	0.071	0.094	−0.023	0.064
ΔWEALTH	0.078	0.042*	0.007	0.018
Δ%CEOOWN	−0.424	0.041***	−0.226	0.372
LAG_%ΔGUIDE	−0.184	0.013***	−0.123	0.013***
GARS	−0.280	0.070***	−0.276	0.045***
Constant	0.402	0.096***	0.380	0.053***
Adjusted R^2	8.5%		4.9%	
DEC = *INC*	p = 0.02		p = 0.46	

Panel B: Model (2)

	Low Resulting Coverage (n = 1,796)		High Resulting Coverage (n = 2,212)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
EXOG_DEC	0.252	0.128**	−0.175	0.195
OTHER_DEC	0.211	0.120*	−0.454	0.259*
INC	0.083	0.057	−0.051	0.032
ΔSIZE	0.155	0.106	0.145	0.068**
ΔEARN	0.165	0.257	0.010	0.145
ΔSALE	0.083	0.100	0.080	0.070
ΔLOSS	−0.082	0.066	−0.002	0.054
ΔMERGE	0.084	0.044*	0.016	0.034
ΔEQUITY	1.004	0.693	−0.098	0.259
ΔBTM	0.061	0.126	−0.025	0.138
ΔCAPEX	−1.190	0.988	−0.365	0.622

(continued on next page)

TABLE 8 (continued)

	Low Resulting Coverage (n = 1,796)		High Resulting Coverage (n = 2,212)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
ΔRDX	1.328	1.227	0.058	0.402
ΔIO	−0.105	0.244	0.103	0.230
$\Delta EVOL$	0.079	0.034**	0.024	0.127
$\Delta SPREAD$	−2.154	7.130	−6.296	7.294
HHI	−0.013	0.142	0.109	0.116
$\Delta LITIGATE$	0.083	0.093	−0.020	0.069
$\Delta WEALTH$	0.061	0.044	0.006	0.019
$\Delta\%CEOOWN$	−0.428	0.046***	−0.278	0.410
$LAG\_\%\Delta GUIDE$	−0.171	0.014***	−0.127	0.014***
$GARS$	−0.307	0.074***	−0.291	0.048***
Constant	0.421	0.098***	0.387	0.058***
Adjusted R^2	8.2%		5.0%	
$EXOG\_DEC = OTHER\_DEC$	$p = 0.70$		$p = 0.01$	
$EXOG\_DEC = INC$	$p = 0.12$		$p = 0.52$	
$OTHER\_DEC = INC$	$p = 0.27$		$p = 0.12$	

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*, **, *** Indicate two-tailed statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Standard errors are clustered by firm.

The sample is based on 4,515 firm-years for 2001–2005. Partitions are based on *COV2*, the resulting level of coverage. See Appendix A for all other variable definitions.

Variable Definitions:
$\%\Delta GUIDE$ = dependent variable, which is $(GUIDE2 - GUIDE1)/GUIDE1$;
$DEC = |\%\Delta COV|$ if $COV1 > COV2$, and 0 otherwise;
$INC = |\%\Delta COV|$ if $COV2 > COV1$, and 0 otherwise;
$EXOG\_DEC_i = (COV1_{it} - ExpectedCoverage_{it})/COV1_{it}$; and
$OTHER\_DEC_{it} = (ExpectedCoverage_{it} - COV2_{it})/COV1_{it}$.

Analyst Recommendation Strength

Our two final cross-sectional analyses condition on characteristics of the analysts following the firm. We first examine recommendations issued by these analysts. Insofar as analyst coverage reduces information asymmetry between investors and corporate insiders, coverage could be valuable to investors regardless of the analyst's outlook on the firm. However, coverage may not be as valuable to managers if the analyst's outlook on the firm is not positive. While positive recommendations improve firm value, neutral or negative recommendations have the opposite effect (Lin and McNichols 1998). Therefore, firms with relatively few positive recommendations could have greater need to target the analyst community to widen coverage. On the other hand, these firms could also have limited ability to attract analysts by increasing disclosure, as few positive recommendations could reflect uncertain or weak prospects for future performance. Therefore, whether and how the guidance responses to changes in coverage vary with the strength of recommendations from remaining analysts is an empirical question.

We perform two analyses to examine this question. First, we partition the sample into two subsamples based on the percentage of "Strong Buy" or "Buy" recommendations from remaining analysts at the end of year t (*STRENGTH*), following prior studies in measuring positive recommendations (Barber et al. 2006; Kadan et al. 2009).[21] The high (low) *STRENGTH* subsample has a mean proportion of positive recommendations of 74.3 percent (27.4 percent). We estimate Model (1) for each subsample. The results, reported in Table 9, Panel A, show that the significant increase in disclosure subsequent to decreases in analyst coverage is present only in the subsample with a low proportion of positive recommendations ($p < 0.01$). Hence, coverage appears to be more valuable to managers when it is positive, possibly because such coverage is more likely to improve firm value and get positive attention from the media and from investors.[22]

In the second analysis, we examine the effect of changes in the strength of recommendations over the year. We augment Model (1) with *ΔSTRENGTH*, the change in the proportion of positive recommendations from year $t-1$ to year t, and interact it with *DEC* and *INC*. Panel B reports the results. Positive recommendations are defined as "Strong Buy" or "Buy" in the first model and as "Strong Buy" only in the second model. In both specifications, the coefficient on *DEC* remains positive and significant ($p < 0.01$) and the coefficient on *INC* remains insignificant. The coefficient on *ΔSTRENGTH* is positive (significant at $p = 0.09$ in the second model). This suggests that an increase in recommendation strength without a change in overall coverage elicits more disclosure, potentially driven by improving prospects for growth or performance. However, when declines in recommendation strength are accompanied by changes in overall coverage, the disclosure response is stronger, as shown by the negative coefficients on both *DEC* ∗ *ΔSTRENGTH* and *INC* ∗ *ΔSTRENGTH*. The interaction terms are significant only in the second model ($p = 0.07$ and $p = 0.054$, respectively), where the coefficient on *DEC* ∗ *ΔSTRENGTH* is of considerably higher magnitude (−0.82) than that on *INC* ∗ *ΔSTRENGTH* (−0.16).[23,24]

In sum, Table 9 shows that the response to a change, especially a decrease, in analyst coverage is stronger when it is accompanied by a decrease in the proportion of positive analysts. Therefore, managers respond not only to changes in the number of analysts covering their firm, but also to the outlook held by those analysts. They appear to be most concerned when the firm not only loses analysts, but also suffers a decline in the overall outlook held by covering analysts.

Brokerage Firm Size

In our final cross-sectional analysis, we examine whether the perceived value of analyst coverage varies with the brokerage house that employs the analyst. Large brokerages provide superior resources to their analysts, leading to higher quality forecasts (Clement 1999). They also have stronger networks to disseminate recommendations (Stickel 1995). Coverage from a large brokerage house can also bring better access to institutional investors.

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[21] We also partition based on the percentage of "Strong Buy" recommendations only, and on changes in the percentage of "Strong Buy" or "Buy" recommendations over year *t*. The statistical inferences are unchanged.

[22] In untabulated analysis, we find that the response from low *STRENGTH* firms is driven by firms with moderately weak or neutral recommendations (i.e., "Hold"), as opposed to firms with very weak recommendations (i.e., "Sell"/"Strong Sell"). As a "Sell" recommendation is a very negative signal on firm prospects, increasing guidance may not be a feasible or effective strategy for such firms to attract analysts, as guidance may not compensate for fundamental unattractiveness. On the other hand, increasing guidance could be an effective strategy for firms with many "Hold" recommendations, whose prospects might be unclear or uncertain.

[23] The results related to *ΔSTRENGTH* are significant only when positive recommendations are restricted to "Strong Buys." This could imply that managers perceive mainly "Strong Buy" recommendations to be positive.

[24] The negative coefficient on *INC* ∗ *ΔSTRENGTH* shows that the response to an increase in coverage is also stronger when accompanied by a decrease in the strength of recommendations. Therefore, the managerial response to any change in coverage is conditional on the change in analysts' outlook on the firm.

TABLE 9

Managers' Responses to Changes in Analyst Coverage
Role of Recommendation Strength

Panel A: Model (1)

	Low Strength (n = 2,272)		High Strength (n = 1,889)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
DEC	0.446	0.171***	0.304	0.206
INC	0.025	0.032	0.040	0.050
ΔSIZE	0.186	0.075**	0.090	0.092
ΔEARN	0.094	0.096	0.330	0.718
ΔSALE	0.032	0.080	0.091	0.100
ΔLOSS	−0.081	0.055	0.092	0.079
ΔMERGE	0.010	0.035	0.099	0.042**
ΔEQUITY	0.014	0.227	1.364	0.810*
ΔBTM	0.128	0.105	−0.131	0.192
ΔCAPEX	0.454	0.706	−1.964	0.992**
ΔRDX	0.939	0.619	0.136	0.761
ΔIO	−0.029	0.185	0.108	0.242
ΔEVOL	0.010	0.048	0.254	0.080***
ΔSPREAD	2.634	5.526	−6.672	9.234
HHI	−0.025	0.120	0.023	0.128
ΔLITIGATE	−0.071	0.072	0.109	0.088
ΔWEALTH	0.021	0.021	0.028	0.030
Δ%CEOOWN	−0.262	0.273	−0.426	0.050***
LAG_%ΔGUIDE	−0.120	0.015***	−0.185	0.019***
GARS	−0.195	0.052***	−0.363	0.078***
Constant	0.362	0.059***	0.444	0.102***
Adjusted R^2	4.7%		9.2%	
DEC = INC	p = 0.01		p = 0.17	

Panel B: Alternative Specification

	Measure of Strength			
	Strong Buy or Buy (n = 4,161)		Strong Buy Only (n = 4,161)	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
DEC	0.378	0.137***	0.361	0.130***
INC	0.045	0.035	0.045	0.035
ΔSTRENGTH	0.108	0.088	0.170	0.101*
*DEC * ΔSTRENGTH*	−0.119	0.372	−0.817	0.453*
*INC * ΔSTRENGTH*	−0.100	0.077	−0.164	0.085*
ΔSIZE	0.149	0.58**	0.152	0.058***
ΔEARN	0.096	0.152	0.093	0.151
ΔSALE	0.084	0.058	0.084	0.059
ΔLOSS	−0.015	0.041	−0.015	0.041
ΔMERGE	0.052	0.027*	0.052	0.027*

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TABLE 9 (continued)

	Measure of Strength			
	Strong Buy or Buy (n = 4,161)		**Strong Buy Only (n = 4,161)**	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
ΔEQUITY	0.724	0.469	0.729	0.469
ΔBTM	0.036	0.098	0.021	0.097
ΔCAPEX	−0.934	0.610	−0.916	0.612
ΔRDX	0.346	0.345	0.367	0.348
ΔIO	0.083	0.158	0.077	0.157
ΔEVOL	0.072	0.044	0.078	0.044
ΔSPREAD	−2.628	5.455	−2.838	5.459
HHI	0.014	0.085	0.015	0.085
ΔLITIGATE	0.020	0.056	0.025	0.056
ΔWEALTH	0.025	0.018	0.025	0.018
Δ%CEOOWN	−0.394	0.042***	−0.394	0.042
LAG_%ΔGUIDE	−0.149	0.009***	−0.149	0.009***
GARS	−0.287	0.046***	−0.285	0.045***
Constant	0.403	0.049***	0.397	0.056***
Adjusted R^2	6.4%		6.5%	
DEC = INC	p = 0.01		p = 0.01	

*, **, *** Indicate two-tailed statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Standard errors are clustered by firm.

The sample is based on 4,161 firm-years for 2001–2005. In Panel A, partitions are based on *STRENGTH* defined as the proportion of Strong Buy or Buy recommendations by analysts covering at end of year *t*. Panel B is based on two alternative definitions of *STRENGTH*. See Appendix A for all other variable definitions.

Variable Definitions:
$\%\Delta GUIDE$ = dependent variable, which is $(GUIDE2 - GUIDE1)/GUIDE1$;
$DEC = |\%\Delta COV|$ if $COV1 > COV2$, and 0 otherwise;
$INC = |\%\Delta COV|$ if $COV2 > COV1$, and 0 otherwise;
$EXOG\_DEC_t = (COV1_{it} - ExpectedCoverage_{it})/COV1_{it}$; and
$OTHER\_DEC_{it} = (ExpectedCoverage_{it} - COV2_{it})/COV1_{it}$.

Following prior research measuring broker size by the number of analysts employed that year (Stickel 1995; Clement 1999), we first partition the sample by the proportion of remaining analysts employed by the five largest brokerage firms at the end of year *t* (*BIGBROKER*).[25] Table 10, Panel A reports results of estimating Model (1) for these subsamples. The high (low) sample has on average 30.7 percent (3.3 percent) of its analysts from the largest brokerages. The response to decreases in coverage is driven by the subsample with a smaller proportion of remaining analysts from the largest brokerage houses (p = 0.02). This finding is consistent with analysts from larger brokerage houses being perceived as more valuable, due to their superior resources, reputation, or better access to institutional investors.

In Table 10, Panel B, we augment Model (1) with *ΔBIGBROKER* and interact it with *DEC* and *INC* respectively. Broadly consistent with the primary results, the coefficient on *DEC* remains

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[25] We also partition based on the ten largest brokerage houses, or the changes over year *t* in the proportion of analysts from the top five or ten brokerage houses. We continue to find a significant disclosure response only from firms with low or decreasing coverage from large brokerage houses.

TABLE 10

Managers' Responses to Changes in Analyst Coverage
Role of Brokerage House Size

Panel A: Model (1)

	Low Proportion of Large Brokers (n = 2,061)		**High Proportion of Large Brokers (n = 2,100)**	
	Estimate	**Std. Error**	**Estimate**	**Std. Error**
DEC	0.463	0.191**	0.236	0.174
INC	0.031	0.045	0.068	0.044
ΔSIZE	0.231	0.080***	0.063	0.076
ΔEARN	0.078	0.192	0.237	0.174
ΔSALE	0.061	0.095	0.075	0.070
ΔLOSS	0.054	0.049	−0.091	0.066
ΔMERGE	0.056	0.043	0.051	0.036
ΔEQUITY	0.999	0.865	0.390	0.296
ΔBTM	0.132	0.119	−0.114	0.107
ΔCAPEX	−1.187	0.848	−0.267	0.710
ΔRDX	0.646	0.578	0.206	0.590
ΔIO	0.107	0.247	0.022	0.187
ΔEVOL	0.056	0.077	0.099	0.040
ΔSPREAD	−1.147	7.809	−6.165	6.763
HHI	0.177	0.124	0.085	0.076
ΔLITIGATE	−0.021	0.081	0.085	0.076
ΔWEALTH	0.024	0.032	0.030	0.021
Δ%CEOOWN	−0.408	0.049***	−0.354	0.187*
LAG_%ΔGUIDE	−0.175	0.017***	−0.123	0.016***
GARS	−0.345	0.070***	−0.224	0.054***
Constant	0.443	0.089***	0.340	0.061***
Adjusted R^2	8.2%		5.1%	
DEC = *INC*	p = 0.02		p = 0.31	

Panel B: Alternative Specification

	Estimate	**Std. Error**
DEC	0.396	0.134***
INC	0.064	0.039*
ΔBIGBROKER	−0.083	0.158
DEC ∗ *ΔBIGBROKER*	−0.427	0.665
INC ∗ *ΔBIGBROKER*	0.252	0.159
ΔSIZE	0.165	0.059***
ΔEARN	0.133	0.154
ΔSALE	0.086	0.058
ΔLOSS	−0.016	0.042
ΔMERGE	0.055	0.027**
ΔEQUITY	0.620	0.476
ΔBTM	0.034	0.098
ΔCAPEX	−1.123	0.606*
ΔRDX	0.393	0.342

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TABLE 10 (continued)

	Estimate	**Std. Error**
ΔIO	0.063	0.158
ΔEVOL	0.077	0.045*
ΔSPREAD	−0.440	5.636
HHI	0.011	0.087
ΔLITIGATE	0.031	0.055
ΔWEALTH	0.025	0.018
Δ%CEOOWN	−0.390	0.043
LAG_%ΔGUIDE	−0.148	0.009***
GARS	−0.290	0.046***
Constant	0.392	0.057***
Adjusted R^2	6.4%	
DEC = *INC*	p = 0.01	

*, **, *** Indicate two-tailed statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Standard errors are clustered by firm.

The sample is based on 4,161 firm-years for 2001–2005. In both panels, *BIGBROKER* is defined as the proportion of analysts covering at end of year *t* employed by the five largest brokerage houses. See Appendix A for all other variable definitions.

Variable Definitions:
$\%\Delta GUIDE$ = dependent variable, which is $(GUIDE2 - GUIDE1)/GUIDE1$;
$DEC = |\%\Delta COV|$ if $COV1 > COV2$, and 0 otherwise;
$INC = |\%\Delta COV|$ if $COV2 > COV1$, and 0 otherwise;
$EXOG\_DEC_t = (COV1_{it} - ExpectedCoverage_{it})/COV1_{it}$; and
$OTHER\_DEC_{it} = (ExpectedCoverage_{it} - COV2_{it})/COV1_{it}$.

positive and significant ($p < 0.01$) and the coefficient on *INC* remains positive but marginally significant ($p = 0.10$). Contrary to expectation, the negative coefficients on *ΔBIGBROKER* and *DEC* ∗ *ΔBIGBROKER* in Panel B are not statistically significant ($p > 0.50$), and the positive coefficient on *INC* ∗ *ΔBIGBROKER* is not statistically significant either at conventional levels, though it is close ($p = 0.11$). The clearly insignificant coefficient on *DEC* ∗ *ΔBIGBROKER* casts doubt on the sensitivity of responses to changes in broker size. However, when we partition the sample by *ΔBIGBROKER*, we obtain a significant coefficient on *DEC* only in the sample with low *ΔBIGBROKER*. As an alternative to the Panel B specification of *ΔBIGBROKER* as a continuous variable, we also estimate a model that interacts *DEC* with an indicator variable for *ΔBIGBROKER*. This alternative specification finds a statistically significant negative coefficient on the interaction term ($p = 0.05$). Accordingly, we conjecture that the lack of significance on *DEC* ∗ *ΔBIGBROKER* in Table 10, Panel B could reflect nonlinearities in the effect of *ΔBIGBROKER*.

Tables 9 and 10 show that managers' responses to changes in coverage vary not only with firm characteristics, but also with analyst characteristics.[26] Analysts are considered more valuable when they are positive about firm prospects, and when they are from a large and possibly more influential brokerage house. Hence, managers do not simply chase more coverage. Rather, they find certain analysts more valuable than others, and target the analyst community accordingly.

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[26] We find similar results with the decomposed Model (2) for the Tables 9 and 10 analyses. Specifically, we find a significant guidance response only to downsizing-driven decreases in coverage, concentrated in firms with low proportion of positive recommendations from remaining analysts, and in firms with low representation from big brokerage houses.

V. ANALYST COVERAGE SUBSEQUENT TO INCREASES IN GUIDANCE

We presume that managers increase guidance in the face of declining analyst coverage, *in order to regain coverage*. If this presumption is valid, we should observe a subsequent revival of analyst interest. We estimate the following model to track subsequent analyst coverage:

$$\begin{aligned}\%\Delta COV_{j,t} = {} & a_0 + a_1 * \%\Delta GUIDE_{j,t} + \beta_1 * \Delta SIZE_{j,t} + \beta_2 \times \Delta EARN_{j,t} + \beta_3 * \Delta SALE_{j,t} \\ & + \beta_4 * \Delta LOSS_{j,t} + \beta_5 * \Delta MISS_{j,t} + \beta_6 * \Delta MERGE_{j,t} + \beta_7 * \Delta EQUITY_{j,t} \\ & + \beta_8 * \Delta BTM_{j,t} + \beta_9 * \Delta CAPEX_{j,t} + \beta_{10} * \Delta RDX_{j,t} + \beta_{11} * \Delta IO_{j,t} \\ & + \beta_{12} * \Delta EVOL_{j,t} + \beta_{13} * \Delta VOLUME_{j,t} + \beta_{14} * \Delta AFE_{j,t} + \beta_{15} * \ln(COV1)_{j,t} \\ & + \beta_{16} * GARS_{j,t} + \varepsilon_{j,t}. \end{aligned} \tag{3}$$

The model controls for changes in various factors that are expected to affect change in analyst coverage. Variable definitions are provided in Appendix A. We estimate the model using data from 2002–2005, so that year $t-1$ is after Reg FD. The results, reported in Table 11, show that the coefficient on $\%\Delta GUIDE$ is significantly positive, consistent with prior research (Lang and Lundholm 1996; Healy et al. 1999). However, we are more interested in investigating how subsequent changes in coverage differ across firms previously experiencing increases, decreases, or no changes in coverage. Hence, we replace $\%\Delta GUIDE$ with $\%\Delta GUIDE_{CONS}$, $\%\Delta GUIDE_{INCR}$, and $\%\Delta GUIDE_{DECR}$, which equal the percentage change in guidance if the firm experienced no change, an increase, or a decrease, respectively, in analyst coverage in year $t-1$, and 0 otherwise.

While the coefficients on $\%\Delta GUIDE_{CONS}$ and $\%\Delta GUIDE_{INCR}$ are both insignificant, the coefficient on $\%\Delta GUIDE_{DECR}$ is positive and significant. Therefore, increased guidance attracts new analysts only among firms that have experienced recent decreases in coverage, implying that the positive analyst response to increases in voluntary disclosure shown in prior research could be driven by firms that have had difficulty retaining analysts. Overall, the results in Table 11 validate our presumption that managers of firms with dwindling analyst coverage increase guidance with the objective of regaining analysts. They also show that increasing guidance appears to be an effective strategy to regain analyst following.

When analyst coverage decreases, managers can increase guidance to communicate with investors directly, substituting for analysts. Even so, any evidence that managers increase guidance upon decreases in coverage still shows that the loss of analysts creates an information gap that managers seek to fill, implying that analyst coverage is considered valuable. Nevertheless, the evidence in Table 11 suggests that the increased guidance does help in regaining analyst coverage. We also check whether the Model (1) and (2) results hold in the pre-Reg FD period. While the response to *INC* stays insignificant, the response to *DEC* also becomes insignificant.[27] This is unsurprising, as managers had the option of guiding analysts privately pre-FD, making their response not fully observable. However, if the weaker public guidance response pre-FD is driven by private communication with analysts, then this also supports our assumption that the guidance response is intended primarily for the analyst community, as opposed to guidance for investors directly. Nevertheless, we caution readers that our results do not generalize to the pre-FD period when managerial guidance is not fully publicly observable.

VI. CONCLUSION

We examine whether managers respond to changes in analyst coverage by altering guidance. We find evidence that managers respond to decreases in analyst coverage by increasing guidance.

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[27] The pre-Reg FD subsample is also subject to the incompleteness of (pre-1998) CIG database coverage and lower testing power due to a smaller sample size. Therefore, these results should be interpreted with caution.

TABLE 11

Do Analysts Come Back after the Change in Managerial Guidance?

	Estimate	Std. Error	Estimate	Std. Error
$\%\Delta GUIDE$	0.025	0.012**		
$\%\Delta GUIDE_{DECR}$			0.052	0.019***
$\%\Delta GUIDE_{CONS}$			0.034	0.035
$\%\Delta GUIDE_{INCR}$			−0.009	0.009
$\Delta SIZE$	0.140	0.023***	0.134	0.023***
$\Delta EARN$	0.222	0.137	0.218	0.137
$\Delta SALE$	0.135	0.034***	0.149	0.034***
$\Delta LOSS$	0.026	0.028	0.027	0.028
$\Delta MISS$	0.005	0.016	0.007	0.016
$\Delta MERGE$	−0.011	0.018	−0.010	0.018
$\Delta EQUITY$	0.339	0.149**	0.336	0.148**
ΔBTM	0.036	0.021*	0.035	0.022
$\Delta CAPEX$	0.116	0.225	0.110	0.223
ΔRDX	0.581	0.271**	0.558	0.273**
ΔIO	0.321	0.086***	0.328	0.086***
$\Delta EVOL$	−0.006	0.042	−0.010	0.043
$\Delta VOLUME$	3.957	1.738**	4.283	1.713**
ΔAFE	−1.100	0.387***	−1.065	0.377***
$ln(COV1)$	−0.246	0.017***	−0.242	0.016***
$GARS$	−0.012	0.020	−0.007	0.020
Constant	0.603	0.041***	0.591	0.041***
Adjusted R^2	17.2%		17.6%	
$\%\Delta GUIDE_{DECR} = \%\Delta GUIDE_{CONS}$			$p = 0.65$	
$\%\Delta GUIDE_{INCR} = \%\Delta GUIDE_{CONS}$			$p = 0.22$	
$\%\Delta GUIDE_{DECR} = \%\Delta GUIDE_{INCR}$			$p = 0.00$	

*, **, *** Indicate two-tailed statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Standard errors are clustered by firm.

The sample is based on 3,876 observations from 2002–2005. The dependent variable is $\%\Delta COV$. See Appendix A for all other variable definitions.

Variable Definitions:
$\%\Delta GUIDE$ = independent variable in the first model, which is $(GUIDE2 - GUIDE1)/GUIDE1$; and
$\%\Delta GUIDE_{CONS}$, $\%\Delta GUIDE_{INCR}$, and $\%\Delta GUIDE_{DECR}$, = independent variables in the second model, which are set to $\%\Delta GUIDE$ for those firms that previously experienced no change, an increase, and a decrease in coverage, respectively, and set to 0 otherwise.

This response is stronger for firms issuing equity, firms with low stock liquidity, and firms with low guidance levels, consistent with analyst coverage being perceived as more valuable for these firms. The response is also stronger for firms with a low resulting level of coverage, a smaller proportion of positive recommendations from remaining analysts, and a smaller proportion of remaining analysts from large brokerage houses. We do not find significant guidance responses to increases in analyst coverage. We also find that the guidance response to decreases in coverage is driven largely by the response to relatively exogenous, downsizing-related decreases.

Our findings provide several implications. While prior research finds that analysts play many useful roles in capital markets, little research has shown whether and how managers value analyst coverage. By showing that managers undertake a costly activity—increasing disclosure—in the face of declines in coverage, our study demonstrates that analyst coverage is indeed perceived as valuable by managers. Our cross-sectional analyses also show that the perceived value of analyst coverage to managers is not constant across firms, as the strength of the observed response to decreases in coverage varies with proxies for the marginal value of analyst coverage. Finally, our results suggest that increases in voluntary disclosure can be a response to changes in analyst coverage, as opposed to being only a driver of coverage. Thus, this study provides a new perspective to the complex interaction between analysts and managers.

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APPENDIX A

Variable Definitions

Variable Name **Definition**

Coverage Variables (I/B/E/S Summary)

$COV1$ = number of analysts following three months after the end of year $t-1$;
$COV2$ = number of analysts following three months after the end of year t;
ΔCOV = $COV2 - COV1$;
$\%\Delta COV$ = $(COV2 - COV1)/COV1$;
DEC = $|\%\Delta COV|$ if $COV1 > COV2$; 0 otherwise;
INC = $|\%\Delta COV|$ if $COV2 > COV1$; 0 otherwise;
$ExpectedCoverage_{it}$ = $\Sigma_j\, ExpectedCoverage_{ijt}$, where $ExpectedCoverage_{ijt} = Min[(BrokerSize_{jt}/BrokerSize_{jt-1}) * Coverage_{ijt-1}, 1]$;
$EXOG\_DEC$ = $(COV1_{it} - ExpectedCoverage_{it})/COV1_{it}$; and
$OTHER\_DEC$ = $(ExpectedCoverage_{it} - COV2_{it})/COV1_{it}$.

Guidance Variables (FirstCall CIG)

$GUIDE1$ = number of managerial guidance in year t, measured over the 12-month period ending three months after the end of year t;
$GUIDE2$ = number of managerial guidance in year $t+1$, measured over the 12-month period ending three months after the end of year $t+1$;
$\Delta GUIDE$ = $GUIDE2 - GUIDE1$;
$\%\Delta GUIDE$ = $(GUIDE2 - GUIDE1)/GUIDE1$;
$\%\Delta GUIDE_{INCR}$ = $\%\Delta GUIDE$ if $\Delta COV > 0$; 0 otherwise;
$\%\Delta GUIDE_{DECR}$ = $\%\Delta GUIDE$ if $\Delta COV < 0$; 0 otherwise; and
$\%\Delta GUIDE_{CONS}$ = $\%\Delta GUIDE$ if $\Delta COV = 0$; 0 otherwise.

Control Variables (Compustat annual, unless otherwise indicated; all variables for year t)

$\Delta SIZE$ = log (market value$_t$/market value$_{t-1}$); market value is data25 * data199;
$\Delta EARN$ = (net income − lagged net income)/lagged total assets, where net income is data18, and total assets is data6;
$\Delta SALE$ = (revenue − lagged revenue)/lagged revenue, where revenue is data12;
$\Delta LOSS$ = $LOSS_t - LOSS_{t-1}$, where $LOSS = 1$ if net income < 0; 0 otherwise;
$\Delta MERGE$ = $MERGE_t - MERGE_{t-1}$, $MERGE = 1$ if the firm had a merger or acquisition, and 0 otherwise. Merger/acquisition identified by AFTNT1 AA/AB;
$\Delta EQUITY$ = (equity issuance$_t$ − equity issuance$_{t-1}$)/lagged market value; equity issuance is data108;
ΔBTM = $BTM_t - BTM_{t-1}$, BTM = book value/market value; book value is data60;
$\Delta CAPEX$ = (capital expenditure$_t$ − capital expenditure$_{t-1}$)/lagged total assets, where capital expenditure is data128;
ΔRDX = (R&D$_t$ − R&D$_{t-1}$)/lagged total assets; R&D is data46 (set to 0 if missing);

(continued on next page)

APPENDIX A (continued)

Variable Name		Definition
ΔIO	=	$IO_t\% - IO_{t-1}\%$; $IO\%$ is percent of institutional ownership from Thomson Financial;
$\Delta EVOL$	=	$EVOL_t - EVOL_{t-1}$, where $EVOL$ = earnings volatility, defined as the standard deviation of return on assets over years $[t-4, t]$; a minimum of 3 years of information is required;
$\Delta SPREAD$	=	$SPREAD_t - SPREAD_{t-1}$, where $SPREAD_t$ = annual mean of $(ASK - BID)/(ASK + BID)/2$, ASK = daily ask price; BID = daily bid price; from CRSP;
HHI	=	Herfindahl-Hirschman Index of industry concentration. For manufacturing industries (SIC codes 2011–3099), values are computed at the four-digit SIC code level using both public as well as private firm data from the U.S. Census, as in Ali et al. (2009). For non-manufacturing industries, values are computed using only public firm (Compustat) data at the four-digit SIC code level, as private firm data are unavailable for these sectors;
$\Delta LITIGATE$	=	rank of $LITIGATE_t - LITIGATE_{t-1}$. We compute *LITIGATE* using the Rogers and Stocken model (2005, Appendix B). We estimate this model for all firm-quarters with available data in 2000–2005, and *LITIGATE* is the predicted value from the model. The rank is transformed to range between 0 and 1. Litigation data are from the Stanford Securities Class Action Database;
$\Delta WEALTH$	=	$\log(WEALTH_t - WEALTH_{t-1})$, *WEALTH* is number of firm shares held by the CEO * market price at the fiscal year-end from Thomson Financial;
$\Delta\%CEOOWN$	=	$\%CEOOWN_t - \%CEOOWN_{t-1}$, where %CEOOWN is percent of firm stock held by the CEO from Thomson Financial;
STRENGTH	=	percent of analyst recommendations that are "Strong buy" or "Buy," from I/B/E/S Detail;
BIGBROKER	=	percent of analysts from the five largest brokerage houses, from I/B/E/S Detail;
$LAG\_\%\Delta GUIDE$	=	lagged $\%\Delta GUIDE$;
GARS	=	1 for all years post-Global Analyst Research Settlement—i.e., including and after 2003, and 0 otherwise;
$\Delta MISS$	=	$MISS_t - MISS_{t-1}$, where $MISS = 1$ if FE < 0; 0 otherwise. FE is analyst forecast error measured as (EPS − latest analyst consensus estimate)/price at the end of the corresponding year from I/B/E/S Summary;
$\Delta VOLUME$	=	$VOLUME_t - VOLUME_{t-1}$; $VOLUME$ = Average of daily (number of shares traded/shares outstanding), over the 12-month period ending three months after the end of year t; a minimum of 100 trading days with trading volume information is required, from CRSP; and
ΔAFE	=	$AFE_t - AFE_{t-1}$; AFE = absolute value (FE), from I/B/E/S Summary.

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Contracting Benefits of Corporate Giving: An Experimental Investigation

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ABSTRACT: We use a laboratory experiment to examine whether corporate giving to charity motivates employees. We find a strong altruism effect. Even when employees cannot be remunerated for their actions, employee contributions to employers significantly increase as the level of corporate giving increases. We also find a signaling effect. When employees can be remunerated for their actions, employee contributions initially increase as the level of corporate giving increases. Thus, even though corporate giving to charity decreases the amount that can be shared between employees and employers, employees behave as if more charitable employers will return proportionally more to employees. It is not until relatively high levels of corporate giving that employee contributions to employers eventually decrease. Collectively, our results suggest that corporate giving is an effective lever for motivating employee effort and contributions to organizational endeavors. Corporate giving can increase the efficacy of implicit (relational) contracts and reduce the need for formal accounting-based reward systems and controls.

Keywords: *corporate giving; contracting; employee motivation; signaling; selection.*

I. INTRODUCTION

Many organizations donate sizeable amounts to charity (Franklin 2008). For example, Whirlpool Corporation has donated more than $70 million in appliances and cash to Habitat for Humanity, and each Target retail store gives 5 percent of its income to local

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charities (Kirdahy 2008). Extant research that attempts to better understand the firm-specific benefits associated with these practices primarily focuses on the role corporate giving plays in facilitating relationships with *external* firm stakeholders. For example, corporate giving can increase awareness, considerations, and preferences for a company's products and services, thereby lifting sales and market share (Maignan et al. 1999). Additionally, corporate giving can ease legal and regulatory constraints, allowing firms to operate more freely in the market (Williams and Barrett 2000). We add to this literature by testing recent theory suggesting that contracting benefits also drive organizations' decisions to engage in corporate giving—we posit that such practices can potentially promote desired behaviors from employees, a key *internal* constituency (Godfrey 2005; Aguilera et al. 2007).

From an accounting perspective, understanding the potential contracting benefits of corporate giving is important because a fundamental role of accounting is to measure the costs and benefits of organizational decisions (Balakrishnan et al. 2009). By gaining a better understanding of the contracting costs and benefits associated with the significant and increasingly vital corporate giving decision, we contribute to the expansive contracting literature in accounting. We also add to recent accounting research that examines issues surrounding firms' charitable endeavors (Eldenburg et al. 2009).

We conduct an experiment to investigate the relation between corporate giving and employee contributions to the firm.[1] In our "no-reward" condition, we examine whether charitable giving motivates employees to contribute more to the firm, even when employees cannot be remunerated for their efforts. We endow 62 undergraduate students with $15.00 each, randomly pair them, and assign them the role of either employer or employee. Employer-participants irrevocably choose to donate to charity between 0 and 100 percent (inclusive) of the amount available to the firm. Contingent on this charitable donation percentage, employee-participants decide how much of their $15.00 endowment to give to the firm. The amount contributed by the employee triples in the employer's hand and is the amount available to the firm. The product of the tripled amount and the employer's selected donation percentage goes to charity with the employer keeping the remainder. In this condition, employee contributions are motivated by altruism only; because the employer pockets the amount remaining after the donation, there is no possibility of a monetary reward to employees.

Even though employees cannot be compensated for their actions, they contribute significantly more to employers who donate higher percentages to charity. Additionally, we find that employers can financially benefit from corporate giving. This effect occurs because, for certain levels of corporate giving, the increase in employee inputs exceeds the increase in charitable donations. These results suggest that corporate giving can serve as an effective lever for motivating employee effort and contributions to organizational endeavors. As such, firms engaging in corporate giving can rely less extensively on costly accounting-based reward systems and controls (Hannan 2005; Sprinkle and Williamson 2007).

Our "reward" condition builds on the no-reward condition by providing employers the opportunity to reward employees. Here, employers can choose to share with the employee any portion of the tripled amount remaining after the charitable donation. Because employers can choose to pocket the entire residual, any changes in employee choices are motivated by employees' beliefs that employers will choose to share the amount remaining after the donation to charity. Two competing forces influence these beliefs: (1) employees' knowledge about the size of the remaining surplus to be split between the employee and employer, and (2) employees' expectations regarding the proportion of this surplus to be returned.

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[1] We use the terms employee contributions, inputs, and efforts interchangeably to represent employees' productive, and personally costly, actions that increase firm profit.

On the one hand, charitable giving reduces the size of the pie to be shared between employer and employee. This feature suggests that the incremental employee giving, relative to the no-reward condition, would decrease as the percent donated to charity increases. On the other hand, charitable giving could have signaling value—employees could believe that employers who are more charitable will, in kind, return more to them. This signal implies that the incremental giving would increase in the percent the employer commits to donating to charity. It is *a priori* unclear which force will dominate, particularly at low levels of charitable giving. Sixty-eight undergraduate students participated in this experiment.

When employers donate 0 percent to charity, we observe significantly higher employee contributions in the reward condition than in the no-reward condition. As there is no outflow to the charity, the additional amount sent indicates that employee contributions are motivated by expected returns. More importantly, at lower levels of charitable giving, employee contributions increase at the same rate as in the no-reward condition. That is, the incremental amount sent does not erode even as the increasing contributions to charity reduce the residual available to the firm. This finding suggests that there is some signaling associated with charitable giving—even though the pie size is decreasing, employees appear to expect more from charitable employers. It is not until relatively high levels of charitable giving that employee contributions decrease—at the limit of 100 percent giving to charity and, as would be expected, contributions converge in the two conditions.

Collectively, these results suggest that corporate giving can increase the efficacy of implicit (relational) contracts. Above and beyond our findings related to altruism, corporate giving can secure additional effort and cooperation by sending a signal to employees about employers' concerns for employee welfare. To this end, our study adds to accounting research that focuses on similar types of contracts, albeit it in different settings (e.g., Towry 2003; Coletti et al. 2005; Hannan 2005; Christ et al. 2010).

Additionally, the positive contracting effects are significantly higher for employees who believe giving to charity is important versus those who do not believe giving to charity is important. Thus, corporate giving can engender positive selection effects. That is, employers engaging in corporate giving can benefit by attracting a workforce that believes donating to charity is important (Turban and Greening 1997).

Finally, we conduct a supplemental condition identical in all respects to the no-reward condition except for the following: rather than having a portion of employees' tripled contributions go to charity, the money comes back to the experimenters. This approach, which effectively levies a tax on employee contributions, allows us to examine whether there is any altruism toward the employer that is attributable to a shrinking pie *per se*.

We find significant differences in employee contributions between our no-reward condition and this supplemental condition. While employee contributions *increase* as the level of charitable giving increases (i.e., the no-reward condition), contributions *decrease* as the proportion returned to the experimenter increases. This stark contrast suggests that employees are not contributing more to employers simply because the pie size shrinks as the percentage going to charity increases—it is altruism associated with charitable giving. The results also suggest that adding a charity to the "game" between employees and employers significantly changes employee contributions. Employees are far less munificent when employers have the option to donate to charity but choose to retain the bulk of employee contributions. This finding is similar in spirit to the result in Kuang and Moser (2009), who report that a forcing contract is less effective when employees know that the employer could have chosen a trust-based contract.

The next section provides background and develops the hypotheses. Section III describes the experiment used to test these hypotheses. Section IV presents the results, and Section V provides a summary and discussion of the results.

II. BACKGROUND AND HYPOTHESES

Research Setting

To investigate whether corporate giving affects employee inputs, we extend Cox's (2004) experimental framework for separating employees' altruistic giving from giving motivated by expected returns. In a single-interaction, two-person setting, Cox (2004) endowed a group of individuals with a fixed sum. Half of the participants (senders) decided whether to send none, some, or all of their endowment to paired, anonymous persons (receivers). The amount sent was tripled—thus, joint payoffs increased in the amount sent. In one condition, the receiver pockets the entire tripled amount. Here, only altruistic giving could occur because the sender cannot receive anything in return.[2] In another condition, the receiver could return some, none, or all of the tripled amount back to the sender. Here, senders' giving could be motivated by both altruism and remuneration beliefs. Accordingly, Cox (2004) interprets the difference in sender giving between these two conditions as giving motivated by expected returns.

In our study, we add an initial stage to the Cox (2004) framework.[3] Receivers (hereafter, employers) first commit to donating between 0 and 100 percent of senders' (hereafter, employees) tripled inputs to charity—higher charity donation percentages indicate greater corporate giving.[4] Employees simultaneously decide, for each possible donation percentage, how much of their $15.00 show-up fee to send to employers.[5] The amount sent is tripled, and the product of this tripled amount and the employer's donation percentage goes to charity. We manipulate between-participants whether employers have the opportunity to reward a percentage (between 0 and 100 percent) of the remaining tripled amount (net of charitable donation) to the employee. Below, we develop hypotheses regarding the relations between corporate giving and employee inputs for our experimental conditions.

Corporate Giving and Employee Contributions Motivated by Altruism

In our "no-reward" condition, the employer keeps the tripled amount remaining after the charitable donation (i.e., the employer cannot send any money back to the employee). Employees know with certainty that every dollar sent strictly reduces their wealth but benefits charity and employers. Accordingly, employees motivated purely by self-interest, as assumed in traditional agency models, would send $0.00 to employers regardless of the amount donated to charity. If employees send money to employers, then it is for altruistic reasons.

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[2] Consistent with economics research, we define altruism as incurring personal costs to benefit others without the expectation of a reward.

[3] As discussed in the next section, we extend Cox (2004) in several ways.

[4] As described in the next section, we employ a strategy elicitation method that enables us to consider a full range of charitable giving choices. Additionally, allowing the range of charitable contributions to go to 100 percent enables us to examine the effects associated with a full range of charitable giving levels, even those that do not currently exist in practice. This is one benefit of controlled laboratory experiments. Finally, this design choice allows us to examine whether employee contributions are "equal" at the 100 percent charitable giving level between the reward and no-reward conditions. At this level of charitable giving, the two settings are equivalent and, as such, should yield comparable employee contributions—an important validity check.

[5] As described in the next section, we endow both employees and employers with $15.00. While employers keep their endowment, we wanted to ensure that the payoffs of employees and employers were equal before employees made their decisions. This design choice is similar to that employed by researchers examining altruism and giving motivated by expected returns in single-period settings (Berg et al. 1995; Cox 2004). Moreover, if employees have preferences for distributional equity but place zero weight on charitable giving, then they should contribute $0 for every level of charitable giving. This is the only contribution amount that equates employee and employer pay.

The results of Cox (2004) suggest that, even in the absence of corporate giving, we will observe a baseline level of employee altruism. Moreover, we frequently observe altruistic actions in dictator games (Eckel and Grossman 1996; Johannesson and Persson 2000) and more natural settings (Smith et al. 1983). For example, there is a large literature documenting that employees engage in organizational citizenship behaviors without regard for explicit recognition or rewards (Podsakoff et al. 2000).

In our study, we are interested in how the *level* of corporate giving affects employee altruism. A recent theoretical model in organizational behavior suggests that the relationship between the amount of corporate giving and employee altruism will be positive (Aguilera et al. 2007). According to this model and research on charitable giving, individuals derive moral satisfaction, or utility, from charitable giving and helping those who help others. Presumably, such utility increases in the size of the charitable donation (Kahneman and Knetsch 1992; Andreoni 1993). Thus, if the level of corporate giving increases the alignment between organizational objectives and employees' moral aims, then employee altruism would increase in the level of corporate giving (Aguilera et al. 2007), which motivates our first hypothesis:

H1: Employee contributions motivated by altruism increase as corporate giving increases.

Corporate Giving and Employee Contributions Motivated by Expected Returns

In our "reward" condition, employers can reward employees between 0 and 100 percent (inclusive) of the tripled amount remaining after the charitable donation. In this condition, employee inputs could be motivated by altruism, as discussed above, as well as by an expectation of receiving a return from employers. In the spirit of Cox (2004), we attribute any difference in the amounts employees send between the two conditions to employee contributions motivated by expected returns.

As in our no-reward condition, assuming purely self-interested, wealth-maximizing behavior, employees will send $0.00 to employers. Because employers' wealth strictly decreases in the amounts sent back or rewarded to employees, wealth-maximizing employers would retain all of the residual. Thus, there would be no change relative to the economic prediction in the no-reward condition. That is, anticipating employer behaviors, employees would always keep their entire endowment.

However, prior research suggests that we will observe a baseline level of employee giving that is motivated by expected returns (Cox 2004). Moreover, Milgrom and Roberts (1992) and Brickley et al. (2000) discuss how employees frequently take actions that increase firm value with the implicit understanding that their contributions will be rewarded by promotions, job security, salary increases, and the like. Both inside and outside the laboratory, research documents the efficacy of implicit, or relational, contracts (Arrow 1974; Prendergast 1999; Camerer 2003; Ostrom and Walker 2003).

As with employee contributions motivated by altruism, we are particularly interested in how the level of corporate giving affects employee contributions that are motivated by expected returns. As corporate giving increases, two competing forces come to bear on employees' remuneration beliefs.

Ceteris paribus, the size of the pie available to employees and employers decreases as corporate giving increases. For any given reward percentage and employee input, employee compensation decreases as corporate giving to charity increases. Thus, on the one hand, if employees believe that the reward percentage will not be affected by the level of corporate giving, then expected-returns-based contributions would strictly decrease as the level of corporate giving increases. Such erosion would be even more severe if employees anticipate that the reward percentage will decrease as the level of corporate giving increases, consistent with employers having some target amount they wish to retain.

On the other hand, employees could believe that the reward percentage will increase as the level of corporate giving increases. Although the amount to be shared is smaller when employers give more to charity, employees could expect employers to reward them with a larger percentage of the remaining amount. Research suggests that it is often reasonable to expect that societal concerns will spill over to internal dealings and facilitate increased contributions via a halo effect (O'Donnell and Schultz 2005). Moreover, employees are likely to deduce that employers showing concern for society would show greater concern for them as well (Godfrey 2005). Such a signaling argument suggests that employee contributions motivated by expected returns could actually increase as the level of corporate giving increases.[6]

The trade-off between these two competing forces is most interesting when employers donate a relatively low percentage to charity. At low levels of corporate giving, employees could potentially expect enough of a reward from employers to justify increased contributions. However, it is unclear which of the two forces will dominate, even at lower levels of corporate giving.

When the level of corporate giving is high, however, employees cannot expect enough of a reward to justify expected-return-motivated contributions. In the limit, as corporate giving approaches 100 percent (employers donate the entire tripled amount to charity), employees cannot receive any reward from employers. Accordingly, contributions based on expected returns should diminish to zero.

In sum, we expect to observe some baseline level of employee contributions motivated by expected returns. At high levels of corporate giving, we expect that contributions motivated by expected returns will approach zero—i.e., employee contributions will converge in our two conditions. The interesting actions lie between these two extremes. As we posit some returns-based contributions when charitable giving is 0 percent and no-returns-based contributions when charitable giving is 100 percent, we expect the level of corporate giving to affect employee contributions motivated by expected returns. Based on the aforementioned tensions, however, it is unclear what this pattern will look like. These arguments lead to our second, non-directional hypothesis.

> **H2:** Employee contributions motivated by expected returns are affected by the level of corporate giving.

III. METHOD

Participants and Design

One hundred thirty undergraduate business students participated in our computer-based laboratory experiment, which we conducted using z-Tree software (Fischbacher 2007). We randomly paired participants and assigned them the role of either employer or employee.[7] We also randomly assigned participant dyads to one of two experimental conditions: (1) a setting in which employers *could not* reward employees' efforts (the no-reward condition), and (2) a setting in which employers *could* reward employees' efforts (the reward condition). There were 62 and 68 participants in no-reward and reward conditions, respectively.

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[6] For it to be credible, a signal must be costly and the cost must vary across types. In our setting, types might represent levels of "trustworthiness," with higher-type employers rewarding higher employee contributions with higher return percentages. As type is not observable, employers might resort to a signaling strategy. Giving to charity, a costly signal, gains credibility if, for example, employees believe that employers who gain more utility from giving to charity also are of a higher type (e.g., are more benevolent to others).

[7] To guard against extraneous influences from implied role-playing (Haynes and Kachelmeier 1998), we described the employee and employer roles to participants using neutral terminology. We referred to the employee and employer as "Person X" and "Person Y," respectively.

Procedures

We randomly assigned participants to a computer terminal situated in one of two rooms. Participants in one room assumed the employee role, and participants in the other room assumed the employer role. Participants read through a set of instructions on their computer terminals and completed a quiz over the information contained in the instructions. If a participant answered a quiz question incorrectly, then the computer described why the chosen response was incorrect and asked for another response. Participants had to answer all quiz questions correctly before proceeding.

After successfully completing the quiz, participants then worked through an interactive example and a practice round. The example and practice round were identical in all respects to the main experiment, except that participants made decisions for both employee and employer roles, and these decisions did not affect participant remuneration. We used the interactive example and practice round to ensure that participants understood the incentives, information, and decisions associated with each role. The interactive example and practice round also enabled us to avoid using potentially leading examples in the instructions. After finishing the practice round, we informed participants of their randomly assigned roles.

Each employee and employer received a $15.00 show-up fee, and we informed participants that their decisions could result in charitable donations. Each dyad's charitable donation was split equally between two charities: one chosen by the employee and the other chosen by the employer. Immediately following the practice round, employees and employers selected one of ten charities from a list containing names and brief mission statements.[8]

Table 1 provides the sequence of steps for both the no-reward and reward conditions. Employers decided how much of the employee's input, which equaled three times the portion of the $15.00 show-up fee employees sent employers, to donate to charity. Employers could choose to donate between 0 and 100 percent in increments of 10 percent. Thus, each employer decided whether to donate 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, or 100 percent of the employee's tripled inputs to charity. Employers made their choices without knowing the actual amount sent by employees. Once selected, employers could not change their charitable donation percentage.

Employees did not immediately learn about the employers' charitable donation decisions. Rather, we employed a strategy method in which employees decided whether to give none, some, or their entire $15.00 show-up fee to employers *for each* of the 11 charitable donation percentages employers might choose.[9] Employees could choose to give the same or different amounts in response to each possible charitable donation percentage. Once selected, employees could not change their decisions regarding the amounts sent to employers.[10]

The portion of the $15.00 show-up fee employees actually sent employers equaled the amount the employee recorded for the charitable donation percentage actually selected by the employer. The amount sent was tripled, and the product of the tripled amount and the employer's donation

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[8] The ten charities were the American Cancer Society, American Heart Association, American Red Cross, Amnesty International, Big Brothers Big Sisters, Habitat for Humanity, Meals on Wheels, Sierra Club, UNICEF, and United Way. The average charitable donation for each dyad was $7.14.

[9] The strategy method allows us to examine (1) how employees react to each possible charitable donation percentage and not simply the one chosen by their assigned employer and, as discussed later, (2) how employers react to each possible amount employees might send. Prior research suggests that decisions using the strategy method are similar to decisions using a sequential protocol (Cason and Mui 1998; Brandts and Charness 2000; Oxoby and McLeish 2004).

[10] Except for extracting the entire strategy rather than a single point, this sequence of events is identical to employees knowing the percent going to charity before they make their decisions about the amount to send.

TABLE 1

Sequence of Steps for Experimental Conditions

Panel A: No-Reward Condition

1. Employers choose to donate to charity between 0 and 100 percent (in increments of 10 percent) of the amount available to the firm.
2. Employees decide how much of their $15.00 endowment to send employers. This choice is conditional on the employer's decision in step 1.
3. The amount sent by employees triples in employers' hands and is the amount available to the firm.
4. The product of the tripled amount (calculated in step 3) and the employer's selected donation percentage (step 1) goes to charity.
5. Employers consume the remainder, if any.

Panel B: Reward Condition

1. Employers choose to donate to charity between 0 and 100 percent (in increments of 10 percent) of the amount available to the firm.
2. Employees decide how much of their $15.00 endowment to send employers. This choice is conditional on the employer's decision in step 1.
3. The amount sent by employees triples in employers' hands and is the amount available to the firm.
4. The product of the tripled amount (calculated in step 3) and the employer's selected donation percentage (step 1) goes to charity.
5. Employers can share with employees any portion of the remainder. The choice of the reward percent (i.e., the percent given back to the employee) is conditioned on the choices in steps 1 and 2.

Panel C: Implementation Notes

a. For step 2, we elicited strategies from employees (i.e., the amount employees would send for each of the 11 charitable donation percentages employers might choose) rather than obtaining a response only for the specific charitable donation percentage selected by employers. The approaches are equivalent because the employee committed to the amount that would be sent for each possible charitable donation choice selected by the employer in step 1.
b. For step 5 of the reward condition, the employer's choice of a reward percentage can be conditioned both on the initial choice of the charitable donation percentage and the amount sent by the employee. The employer already knows the percent s/he has chosen to give to charity. Thus, we elicited the reward percent (i.e., the reward strategy) for each possible amount ($0.00 to $15.00 in $1.00 dollar increments) the employee could send.

percentage went to charity. For example, if an employer decided to give 40 percent to charity and the employee chose to contribute $8.00 for this level of giving, then the tripled amount would equal $24.00 ($8.00 × 3) and the amount donated to charity would equal $9.60 ($24.00 × 0.40).

We manipulate, between conditions, whether employers could return to employees a portion of the amount remaining after the charitable donation (in the above example, the remaining amount is $14.40 = $24.00 − $9.60). This change is shown in step 5 of Panels A and B in Table 1.

In the no-reward condition (Table 1, Panel A) employers kept the tripled amount remaining after the charitable donation. Returning to the example above, the employer would keep the $14.40, yielding a total payoff of $29.40 ($14.40 + $15.00 show-up fee). The employee's payoff would equal $7.00 ($15.00 show-up fee − $8.00 sent to the employer).

In the reward condition (Table 1, Panel B), employers had the opportunity to give employees a portion of the tripled amount remaining after the charitable donation. In this condition, employers did not immediately learn the amount sent by their paired employee. Rather, we again employed a strategy method for this decision. For each of the 15 positive amounts the employee could send (i.e., $1.00 through $15.00), employers decided the reward percentage as a choice from 0 to 100 percent, in increments of 10 percent. Employers could reward the same or different percentages in response to each possible amount sent by the employee. Appropriately, the employer makes both the decision regarding the reward percentage and the percent donated to charity without knowing the actual amount sent by the employee.[11]

The actual percentage of the remaining amount (net of charitable donation) the employer gives the employee is the percentage the employer recorded for the actual amount sent by the employee. Returning to the earlier example, assume that for the $8.00 the employee sent, the employer chose to give the employee 70 percent of the $14.40 remaining amount. The employee's payoff would equal $17.08 [($15.00 show-up fee − $8.00) + (0.70 × $14.40)]. The employer's payoff would equal $19.32 [$15.00 show-up fee + (1.00 − 0.70) × $14.40].

After finalizing their decisions, employees and employers completed a post-experimental questionnaire.[12] Decisions were then revealed and payoffs were calculated. Participants were paid in cash. Average total compensation was $16.85 and ranged from $0.00 to $45.00 for less than one hour of participants' time. At the end of each session, the experimenters mailed each dyad's donation to the selected charities. The experiment did not involve deception of any form.

IV. RESULTS

Corporate Giving and Employee Contributions Motivated by Altruism (H1)

H1 posits that employee contributions motivated by altruism increase as corporate giving increases. Panels A and B of Figure 1 present, for the no-reward condition, average employee contributions for each possible charitable donation percentage. Because we elicit strategies from employees, 31 observations underlie each of the data points.

Consistent with H1, Panels A and B of Figure 1 show a positive relation between employee contributions and charitable donation percentages. Employees sent employers $1.16 when 0 percent of their contributions were donated to charity and $7.68 when 100 percent of their contributions were donated to charity. Between these two extremes, average employee contributions increase monotonically.

We estimate a linear regression to obtain the slope and significance of the relation between the amounts employees sent and employer charitable donation percentages.[13] The results of this regression reveal that the slope is reliably positive (slope $= 0.059$, $t = 15.40$, $p < 0.01$, one-tailed). We infer a clear altruism effect—employees' contributions increase as the percentage employers donate to charity increases.

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[11] Again, except for extracting the entire strategy rather than a single point, this sequence of events is identical to employers knowing the amount sent by employees before deciding on the reward percentage.

[12] Administering the post-experimental questionnaire before providing feedback regarding actual choices enables us to examine the responses of employees and employers to all possible decisions the other party might make (and thus not be confounded by the actual decisions made during the experiment). Moreover, we conduct a single-period experiment to examine issues related to altruism and expected returns that are not confounded with the strategic issues that could exist in a multi-period setting.

[13] We employ a generalized estimation equation model where the dependent variable equals employee contributions (in $) and the independent variable equals the charitable donation percentage. This model takes into account the repeated-measures aspect of our design and clusters standard errors by employee (Peterson 2009).

FIGURE 1

Results
No-Reward Condition

Panel A: Descriptive Statistics
Panel B: Employee Contributions by Charitable Donation Percentage

Charitable Donation Percentage	Employee Contributions Mean (Std. Dev.)	Employer Payoffs Mean (Std. Dev.)	Number of Employers Selecting Charitable Donation Percentage
0%	1.16 (3.03)	18.48 (9.10)	0
10%	2.45 (4.06)	21.62 (10.97)	3
20%	2.74 (3.93)	21.58 (9.44)	1
30%	3.19 (3.85)	21.71 (8.09)	7
40%	3.71 (3.94)	21.68 (7.10)	4
50%	4.52 (3.89)	21.77 (5.83)	7
60%	4.94 (3.95)	20.92 (4.74)	2
70%	5.23 (4.14)	19.70 (3.72)	1
80%	6.06 (4.42)	18.64 (2.65)	1
90%	6.61 (4.68)	16.98 (1.40)	1
100%	7.68 (5.18)	15.00 (0.00)	4

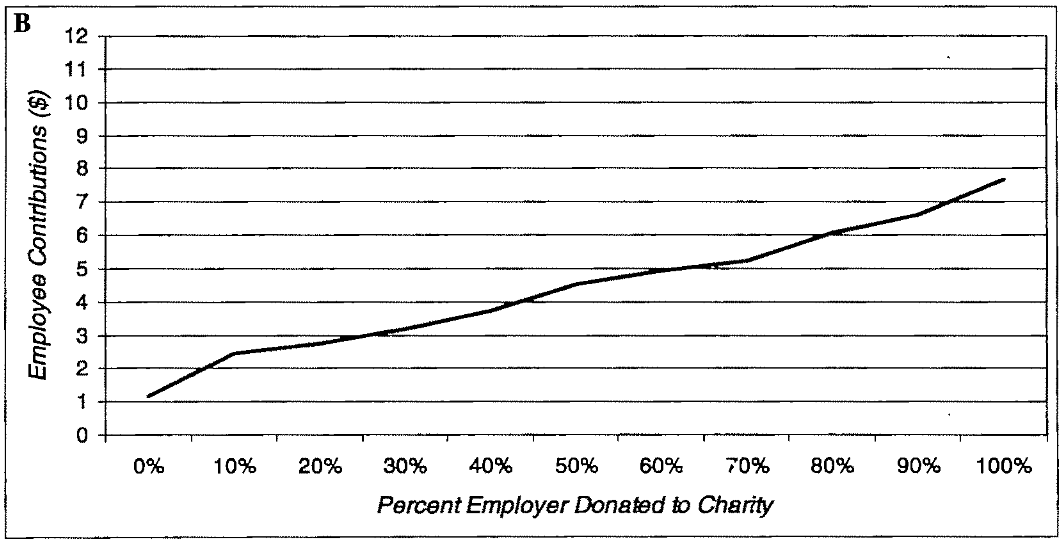

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FIGURE 1 (continued)

In the no-reward condition, we examine whether charitable giving motivates employees to contribute more to the firm, even when employees cannot be remunerated for their efforts. We endowed 62 undergraduate students with \$15.00 each, randomly paired them, and assigned them the role of either employer or employee. Employer-participants irrevocably choose to donate to charity between 0 and 100 percent (inclusive) of the amount available to the firm. Contingent on this charitable donation percentage, employees decide how much of their \$15.00 endowment to give to the firm. The amount contributed by the employee triples in the employer's hand and is the amount available to the firm. The product of the tripled amount and the employer's selected donation percentage goes to charity with the employer keeping the remainder. Panel A provides descriptive statistics for this condition, and Panel B graphically presents average contributions by charitable donation percentage. Because we elicit strategies from employees, 31 observations underlie each of the data points.

Panel A of Figure 1 also presents employers' payoffs for each possible charitable donation choice. As with employee contributions, each data point is based on the average responses of the 31 participants who played the role of employees. For example, because employees choose to send, on average, \$2.45 at a 10 percent charitable donation level, employers earned \$21.615 ($= \$2.45 \times 3 \times (1.00 - 0.10) + \$15.00$ show up fee), and the charity received \$0.735 ($= \$2.45 \times 3 \times 0.10$).

Notice that employers are financially better off when they donate between 10 percent and 50 percent to charity. On average, employers earn \$18.48 for a 0 percent donation choice, \$21.62 for a 10 percent donation, peaking at \$21.77 for a 50 percent donation, and then dropping to, of course, the \$15.00 show-up fee for a 100 percent donation. Paired sample t-tests indicate that employers' payoffs are highest when they donate a portion of employees' inputs to charity (e.g., the 10, 20, 30, 40, and 50 percent donation levels yield higher returns than a 0 percent donation; largest $p < 0.05$, two-tailed). Moreover, employers' payoffs at the 50 percent donation level are significantly higher than at the 60 percent level ($t = 3.25$, $p < 0.01$, two-tailed). Finally, payoffs are not statistically different from the 10 to 50 percent donation levels (smallest $p > 0.50$, two-tailed). Collectively, these results suggest that employers can be better off at relatively low levels of charitable giving.

Panel A of Figure 1 also reports the number of employers choosing each of the charitable donation percentages. On average, employers appear to anticipate employee behavior. Twenty-two of the 31 (71 percent) employers chose to donate between 10 percent and 50 percent (inclusive) to charity. Interestingly, the average donation percentage is 49.35, where we observe the highest employer payoffs.

Collectively, these results suggest that, consistent with H1, employee contributions increase in the level of corporate giving. Our results also suggest that employers can benefit from engaging in corporate giving. By donating a relatively small portion of employees' inputs to charity, employees give more to the firm, which, in turn, leads to higher net payoffs for employers.

Corporate Giving and Employee Contributions Motivated by Expected Returns (H2)

H2 posits that the level of corporate giving affects employee contributions motivated by expected returns. Panels A and B of Figure 2 present, for the reward condition, average employee contributions for each possible charitable donation percentage. Because we elicit strategies from employees, 34 observations underlie each of the data points.

To assess employee contributions motivated by expected returns, we examine differences in the amounts employees sent between the reward and no-reward conditions. Panel B of Figure 2 shows these differences for each possible charitable donation percentage. Notice that, consistent with H2, the difference in employee contributions between conditions changes as the charitable donation percentage changes.

FIGURE 2
Results
Reward Condition

Panel A: Descriptive Statistics
Panel B: Employee Contributions by Charitable Donation Percentage
Panel C: Employer Giveback Percentage by Selected Charitable Donation Percentage
Panel D: Employee Return per Dollar Contributed by Selected Charitable Donation Percentage

Charitable Donation Percentage	Employee Contributions Mean (Std. Dev.)	Maximum Employer Payoffs Mean (Std. Dev.)	Number of Employers Selecting Charitable Donation Percentage
0%	6.44	34.32	2
	(6.57)	(19.70)	
10%	7.59	35.49	9
	(5.39)	(14.56)	
20%	8.21	34.69	6
	(5.30)	(12.71)	
30%	8.76	33.41	4
	(4.93)	(10.35)	
40%	7.06	27.71	2
	(4.96)	(8.93)	
50%	7.38	26.07	5
	(5.35)	(8.03)	
60%	6.94	23.33	1
	(5.41)	(6.49)	
70%	7.29	21.56	1
	(5.45)	(4.91)	
80%	7.03	19.22	1
	(5.42)	(3.25)	
90%	6.94	17.08	0
	(5.77)	(1.73)	
100%	6.88	15.00	3
	(6.65)	(0.00)	

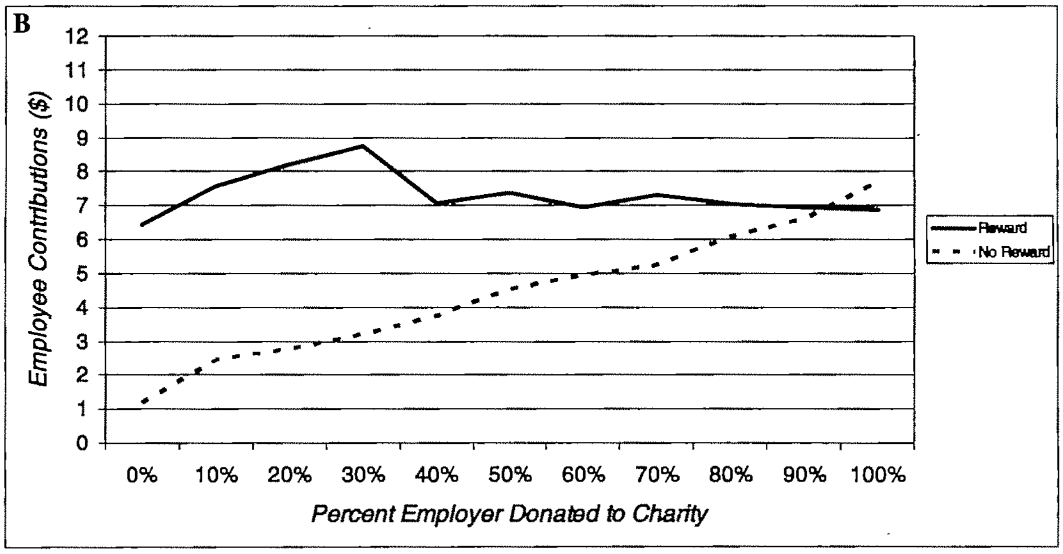

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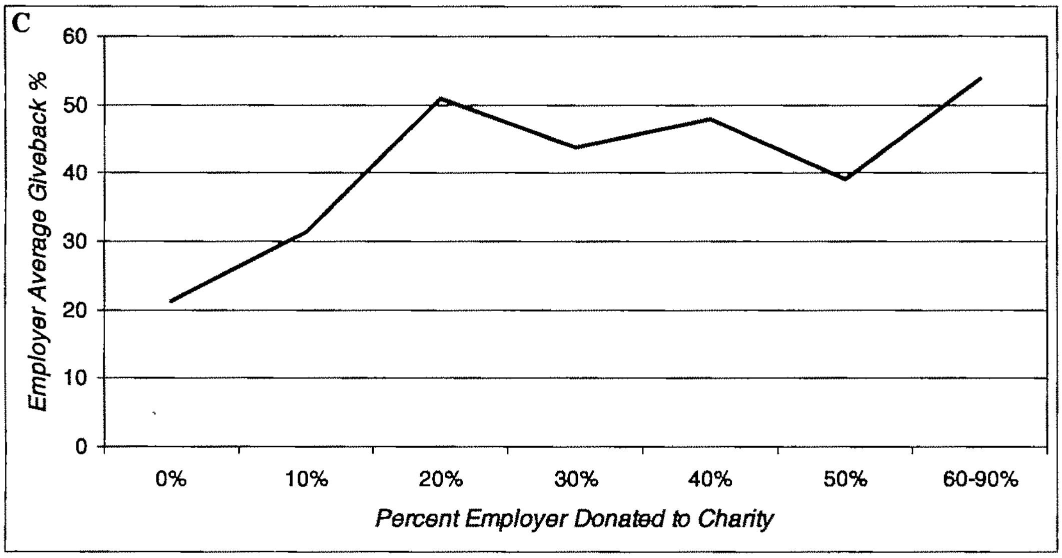
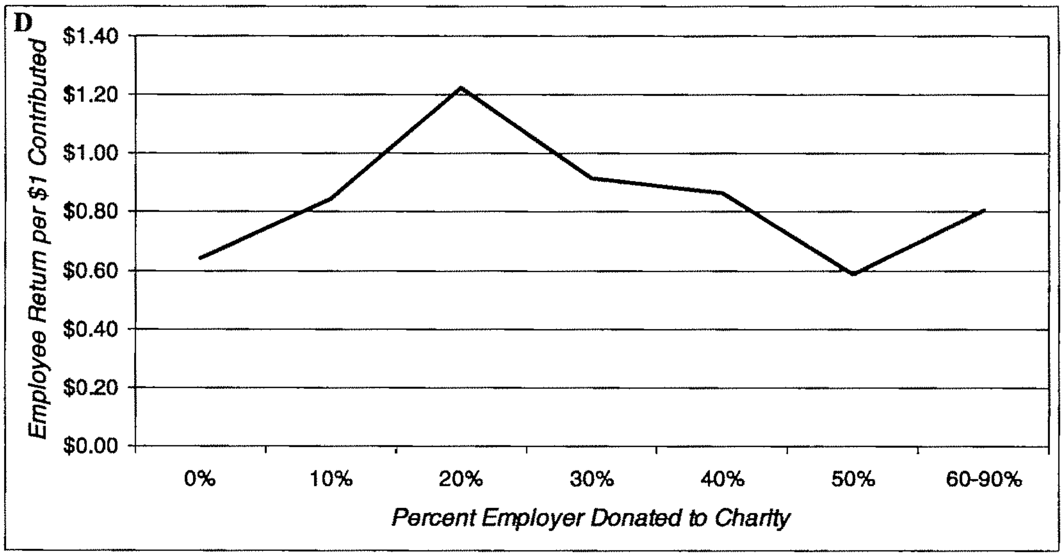
FIGURE 2 (continued)





The reward condition builds on the no-reward condition (see Figure 1) by providing employers the opportunity to remunerate employees—in this condition, employers can choose to share with the employee any portion of the tripled amount remaining after the charitable donation. Sixty-eight undergraduate students participated in this experiment. Panel A provides descriptive statistics for this condition, and Panel B graphically presents average contributions by charitable donation percentage for both the reward and no-reward conditions. Each data point in these panels is the average of 34 observations. Panels C and D present employer giveback percentages and employee returns per dollar contributed, respectively, for the charitable donation percentage actually selected by the employer. Accordingly, each data point in these panels represents the average for the actual number of employers choosing the plotted charitable donation percentage.

We test H2 using an ANOVA, with employee contributions as the dependent variable, treatment condition (reward versus no-reward) as the between-participants factor, and charitable donation percentage (0 percent, 10 percent,. . .,90 percent, 100 percent) as the within-participants (repeated-measures) factor. We find that the treatment condition × charitable donation percentage interaction effect is statistically significant ($F = 6.87$, $p < 0.01$, two-tailed). Therefore, consistent with H2, the level of corporate giving affects employee contributions motivated by expected returns. We next follow up on the specific results that comprise this interaction effect.

First, we examine employee contributions when charitable contributions equal 0 percent to check whether our reward condition motivated contributions based on expected returns. Panels A and B of Figure 2 suggest that employee contributions are motivated by expected returns. The difference in employee contributions between the reward and no-reward conditions at a 0 percent charitable giving level equals $5.28 and is statistically significant ($t = 4.10$, $p < 0.01$, two-tailed). This finding is consistent with the results typically reported in trust games (Cox 2004) and shows that our reward condition provides the opportunity for contributions based on expected returns.

Second, we investigate the relatively low charitable donation percentages where the signaling effect of charitable giving has the greatest potential to offset its decreasing pie-size effect. Panel B of Figure 2 shows that employee contributions appear to increase at the same rate between the reward and no-reward conditions for charitable donations between 0 percent and 30 percent. An ANOVA with employee contributions as the dependent variable, treatment condition (reward versus no-reward) as the between-participants factor, and charitable donation percentage (0 percent, 10 percent, 20 percent, and 30 percent) as the within-participants (repeated-measures) factor reveals that the treatment condition × charitable donation percentage interaction effect is not statistically significant ($F = 0.09$, $p = 0.97$, two-tailed). Since charitable donations decrease the amount to be shared between employees and employers, this finding suggests that charitable giving can have signaling value—employees appear to expect a higher reward percentage from employers donating to charity.[14] Had employees expected the same or a lower reward percentage from employers donating to charity, we would have observed a decrease in employee contributions over this range.

Employees seem justified in anticipating these higher reward percentages. Panel C of Figure 2 shows the average employer giveback percentage by the charitable donation percentage selected by the employer.[15] On average, the two employers who gave 0 percent to charity returned 21.33 percent of the available amount to the employee. Consistent with a positive relation between the percent given to charity and the reward percent, the corresponding numbers are 31.26 percent ($n = 9$), 51.00 percent ($n = 6$), 43.67 percent ($n = 4$), 48.00 percent ($n = 2$), 39.07 percent ($n = 5$), and 53.78 percent ($n = 3$) for employers who chose to give 10 percent, 20 percent, 30 percent, 40 percent, 50 percent, and 60–90 percent to charity, respectively. Overall, employers choosing to donate smaller amounts to charity (0 or 10 percent) chose to give back a smaller percentage to employees than employers choosing to donate larger amounts to charity (20 through 90 percent; 29.45 percent versus 46.67 percent, $t = 2.29$, $p = 0.03$, two-tailed).

Further, as shown in Panel D of Figure 2, employees are best off when they are paired with employers who donate 20 percent to charity. Employers, on average, rewarded 51 percent of employees' net contributions—thus, employees earned 3 × (amount sent) × $(1.00 - 0.20) \times 0.51 =$

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[14] The maximum employer payoff (i.e., the employer payoff assuming a 0 percent employee giveback) is similar for charitable donations between 0 and 30 percent ($F = 0.29$, $p = 0.83$, two-tailed), indicating that the higher employee contributions in this range offset the cost to the employer of the charitable donation.

[15] Unlike Panel B of Figures 1 and 2, we cannot plot the entire strategy space because we elicited conditional strategies at this point in the experiment—that is, employers had already selected a charitable donation percentage. We combine the 60 percent to 90 percent charitable giving percentages because there are only three total observations for these four giving levels (see Panel A of Figure 2).

$1.22 return for every $1.00 contributed. This return is greater than the average of the other charitable donations percentages employers might select (t = 2.46, $p < 0.02$, two-tailed), and is also higher than the average return typically observed in trust games (Cox 2004).[16] This finding again suggests that charitable giving can have signaling value and that employees, on average, receive higher rewards for their contributions to employers who engage in relatively small amounts of charitable giving.

Third, we examine the relatively higher charitable donation percentages where we expect the pie-size effect of charitable giving to dominate the signaling effect, which would erode employee contributions motivated by expected returns. Panel B of Figure 2 shows that the amounts employees send in the reward condition decrease as charitable donations increase from 30 to 100 percent, converging to the no-reward level at 100 percent. An ANOVA with employee contributions as the dependent variable, treatment condition (reward versus no-reward) as the between-participants factor, and charitable donation percentage (30 percent, 40 percent,. . .,90 percent, 100 percent) as the within-participants (repeated-measures) factor reveals that the treatment condition × charitable donation percentage interaction effect is significant (F = 8.23, $p < 0.01$, two-tailed). This finding suggests that employees expect less total return as charitable donations exceed 30 percent. That is, the pie-size effect appears to dominate any signaling effect as the charitable donation percentage increases beyond "low" levels.

Finally, a t-test indicates that the difference in employee contributions between the reward and no-reward conditions at 100 percent is not significant (t = 0.53, p = 0.60, two-tailed). This finding is expected because, at this level of charitable giving, the two settings are equivalent and, as such, should yield comparable employee contributions. This convergence also gives us confidence that there is nothing about the reward condition *per se* that affects altruistic contributions.

Collectively, our reward condition results indicate: (1) a significant baseline level of employee contributions motivated by expected returns; (2) that contributions motivated by expected returns do not decrease for "low" charitable donation percentages as employees behave as if they (correctly) anticipate that employers with higher charitable donation choices also give higher reward percentages; and (3) contributions motivated by expected returns ultimately erode at higher charitable donation percentages, as the amount available to reward employees becomes too small to justify returns-based contributions. In sum, we find a nonlinear relation between expected-returns-based contributions by employees and the charitable donation percentages selected by employers.

Additional Analyses

Sanders (2008, 36) argues that acts of corporate social responsibility help attract the "right" kinds of employees to organizations. In a similar vein, corporate giving could attract employees for whom giving to charity is important (Turban and Greening 1997). This reasoning suggests the need to understand whether employees for whom donating to charity is important respond differently to corporate giving practices than employees who do not believe donating to charity is important.

The positive contracting benefits we observe would presumably be greater for employees who believe giving to charity is important versus employees who do not believe giving to charity is important. Employees believing in the importance of charitable giving would likely derive higher levels of utility from charitable giving and helping those who help others. Thus, they would respond more altruistically to employers engaging in charitable giving. Moreover, charitable giving by employers could also send a more positive signal to employees who believe that giving to charity is important. For employees who do not believe that giving to charity is important, charitable giving by employers could actually send a negative signal in that it could be viewed as a "waste" of firm resources (e.g., resources better spent rewarding employee contributions).

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[16] Our analysis excludes the 100 percent charitable donation level where employee returns = $0.

To explore these possibilities, we split the full sample into employees who believe that giving to charity is important and employees who do not believe that giving to charity is important. Using a seven-point Likert scale, we asked participants in our post-experimental questionnaire whether "donating money to charity is important to me," where 1 = "strongly disagree," 4 = "neither agree nor disagree" and 7 = "strongly agree." We categorize employees with a response greater than 4 as believing that charitable giving is important (21 and 25 employees in the no-reward and reward conditions, respectively), and employees with a response of 4 or less as not believing that charitable giving is important (10 and 9 employees in the no-reward and reward conditions, respectively). Table 2 reports descriptive statistics for these two subsamples.

We observe a stronger altruism effect for employees who believe that giving to charity is important. In the no-reward condition, employees who believe that giving to charity is important increase their contributions by $8.14 (from $0.81 to $8.95) when corporate giving increases from 0 percent to 100 percent; the corresponding amount for employees who do not believe that giving to

TABLE 2

Employee Contributions to Employers by Employees' Beliefs about the Importance of Giving to Charity and Condition

Charitable Donation Percentage	**Employees Who Believe that Giving to Charity Is Important**		**Employees Who Do Not Believe that Giving to Charity is Important**	
	No-Reward Condition Mean (Std. Dev.)	**Reward Condition Mean (Std. Dev.)**	**No-Reward Condition Mean (Std. Dev.)**	**Reward Condition Mean (Std. Dev.)**
0%	0.81	4.28	1.90	12.44
	(1.91)	(6.13)	(4.65)	(3.17)
10%	2.62	7.04	2.10	9.11
	(3.88)	(5.49)	(4.63)	(5.11)
20%	2.90	8.20	2.40	8.22
	(3.73)	(5.37)	(4.53)	(5.40)
30%	3.33	8.76	2.90	8.78
	(3.57)	(4.99)	(4.58)	(5.07)
40%	4.00	7.52	3.10	5.78
	(3.51)	(4.47)	(4.89)	(6.24)
50%	5.00	8.00	3.50	5.67
	(3.24)	(5.01)	(5.04)	(6.21)
60%	5.52	7.40	3.70	5.67
	(3.19)	(5.12)	(5.19)	(6.29)
70%	5.90	7.84	3.80	5.78
	(3.36)	(5.12)	(5.35)	(6.36)
80%	6.95	7.52	4.20	5.67
	(3.68)	(5.03)	(5.41)	(6.52)
90%	7.57	7.60	4.60	5.11
	(4.06)	(5.45)	(5.46)	(6.57)
100%	8.95	7.48	5.00	5.22
	(4.60)	(6.68)	(5.54)	(6.65)

We split the full sample into employees who believe that giving to charity is important and employees who do not believe that giving to charity is important based on a response to our post-experimental questionnaire. There are 21 and 25 employees in the no-reward and reward conditions, respectively, who believe that giving to charity is important. There are 10 and 9 employees in the no-reward and reward conditions, respectively, who do not believe that giving to charity is important.

charity is important is only \$3.10 (from \$1.90 to \$5.00). Consistent with this statement, an ANOVA with employee contributions as the dependent variable, charitable-giving importance (important versus not important) as a between-participants factor, and charitable donation percentage as the within-participants factor yields a significant charitable-giving importance × charitable donation percentage interaction effect ($F = 4.72$, $p < 0.01$, two-tailed).

We also find that employees' beliefs about the importance of charitable giving affects the relation between corporate giving and contributions motivated by expected returns.[17] For employees who believe that giving to charity is important, the differences in contributions between the reward and no-reward conditions *increase* from \$3.47 to \$5.43 at the 0 percent and 30 percent charitable donation percentages, respectively. This finding suggests that employees who believe that giving to charity is important appear to expect more in return from employers who donate between 10 and 30 percent to charity. Using this sample of employees, an ANOVA with employee contributions as the dependent variable, treatment condition (reward versus no-reward) as the between-participants factor, and charitable donation percentage (0 percent, 10 percent, 20 percent, and 30 percent) as the within-participants (repeated-measures) factor reveals that the treatment condition × charitable donation percentage interaction effect is not statistically significant ($F = 1.62$, $p = 0.19$, two-tailed). That said, the interaction effect is statistically significant if we include, as a covariate, the participants' response to the post-experimental question, "I enjoyed the experiment" ($F = 2.73$, $p = 0.05$, two-tailed).[18]

In contrast, low levels of charitable giving appear to send a negative signal about expected returns to employees who do not believe giving to charity is important. In this sample, the differences in employee contributions between the reward and no-reward condition *decrease* from \$10.54 to \$5.88 at the 0 percent and 30 percent charitable donation percentages, respectively. Estimating the above-described ANOVA for this sample reveals a significant treatment condition × charitable donation percentage interaction ($F = 5.73$, $p < 0.01$, two-tailed), suggesting that contributions motivated by expected returns decrease even at low levels of charitable giving for employees who do not believe that giving to charity is important.

Collectively, these results suggest that the contracting benefits of corporate giving are higher within the subset of employees for whom giving to charity is important—that is, corporate giving appears to have important selection effects.

Supplemental Condition

To enhance the construct validity of our study, we conducted a supplemental condition that was identical in all respects to the no-reward condition except that, rather than having a portion of employees' tripled contributions go to charity, the money comes back to the experimenters. The proportion actually reverted to the experimenters was randomly determined rather than being chosen by employers.[19] This approach, which effectively levies a tax on employee contributions, allows us to examine whether there is any altruism toward the employer that is attributable to a shrinking pie *per se*.[20] Thirty-six undergraduate students participated in this experiment.[21]

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[17] Using the entire sample, an ANOVA with employee contributions as the dependent variable, treatment condition (reward versus no-reward) and employees beliefs about the importance of charitable giving (important versus not important) as between-participant factors, and charitable donation percentage (0 percent, 10 percent, 20 percent, and 30 percent) as the within-participants (repeated-measures) factor reveals that the three-way treatment condition × charitable donation percentage × beliefs about the importance of charitable giving interaction effect is statistically significant ($F = 6.06$, $p < 0.01$, two-tailed). This suggests that beliefs about charitable giving affected contributions motivated by expected returns at lower levels of charitable giving. The tests reported in this section follow up on this three-way interaction effect. When estimating this ANOVA for higher levels of charitable giving (40 percent through 100 percent), the three-way interaction is not statistically significant ($F = 0.45$, $p = 0.85$, two-tailed). This result suggests that beliefs about the importance of charitable giving did not affect contributions motivated by expected returns at higher charitable donation percentages.

[18] Essentially, employee-participants who enjoyed the experiment contributed more than participants who did not enjoy the experiment, similar to an effect observed by Williamson (2008). Including this covariate on all other analyses does not alter the significance or interpretation of any results.

We find significant differences in employee contributions between the no-reward condition and this supplemental condition. Specifically, while employee contributions *increase* as the level of charitable giving increases (i.e., no-reward condition), contributions *decrease* as the proportion returned to the experimenter increases.[22] The relation between employee contributions and the proportion going to charity is, as presented earlier, significantly *positive* (slope $= 0.059$, $t = 15.40$, $p < 0.01$, one-tailed), whereas the relation between employee contributions and the proportion reverting to the experimenters is significantly *negative* (slope $= -0.057$, $t = 5.59$, $p < 0.02$, two-tailed). Moreover, an ANOVA with employee contributions as the dependent variable, treatment condition (charity versus experimenter) as the between-participants factor, and charitable donation percentage (0 percent, 10 percent,. . .,90 percent, 100 percent) as the within-participants (repeated-measures) factor reveals a highly significant treatment condition × charitable donation percentage interaction effect ($F = 33.33$, $p < 0.01$, two-tailed).

This contrast suggests that employees are not contributing more to employers simply because the pie size shrinks as the percentage going to charity increases—it is altruism associated with charitable giving. The results of this supplemental condition also indicate that the source of the shrinkage in the amount available to the firm significantly changes employee contributions—that is, relative to when the employer's share diminished because of a random "tax." Employees are far less munificent when employers have the option to donate to charity but choose to retain the bulk of employee contributions. This finding is similar in spirit to Kuang and Moser's (2009) finding that a forcing contract is less effective when employees know that the employer could have chosen a trust-based contract.

V. SUMMARY AND DISCUSSION

We use an experiment to examine whether corporate giving can ameliorate employment contracting frictions. We find that corporate giving engenders employee altruism. Even when employees cannot be remunerated for their actions, employee contributions significantly increase as the level of corporate giving increases. In turn, employers can financially benefit from corporate giving—at lower levels, the increase in employee inputs exceeds the increase in charitable donations. We also find that corporate giving has signaling effects. When employees can be remunerated for their actions, employee contributions increase at lower levels of charitable giving. Thus, even though charitable giving decreases the amount that can be shared between employees and employers, employees behave as if more charitable employers will return proportionally more to employees. It is not until relatively high levels of charitable giving that employee contributions decrease. Finally, we find that corporate giving has selection effects—we provide some evidence that the altruism and signaling benefits are higher for employees who believe that giving to charity is important.

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[19] As described in participants' instructions, we determined this percentage at the end of the session by randomly drawing a ball from a container holding 11 balls labeled 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, and 100%.

[20] That is, it is possible that our altruism findings are not associated with charitable giving but, rather, are driven by employees' desires to give employers money. As the charitable donation percentage increases, employees must contribute more if they wish to give employers a fixed sum of money. For example, if employees desired to give employers $4, then contributions would equal $4 at a 0 percent charitable giving level, but would have to equal $8 at the 50 percent charitable giving level. This reasoning suggests that a mechanism that "taxes" employers' payoffs would lead to increased employee contributions. We note that this reasoning also implies that employees should contribute $0 at a 100 percent charitable giving level because employers cannot receive anything at this point—this is not consistent with what we observe, however (see Figure 1).

[21] To examine possible timing differences, we conducted (at the same time as our supplemental condition) an additional treatment of our no-reward condition with 42 participants. The results of this condition are inferentially equivalent to those presented earlier (e.g., Figure 1). We did not conduct a return-to-the-experimenters treatment in the reward condition because, as presented below, the results in the no-reward condition are very strong and there is no reason to expect an interaction effect between the reward and no-reward conditions. Moreover, as presented earlier, we find that employee contributions are essentially "equal" between the reward and no-reward conditions at a 100 percent level of charitable giving, providing confidence that there is nothing about the reward condition *per se* that affects altruistic contributions. Nonetheless, we acknowledge this as a potential limitation of our study.

[22] The contributions decreased monotonically from an average of $5.94 at 0 percent to $0.72 at 100 percent. These amounts differ significantly from the amounts contributed under the no-reward condition ($t = 3.60$ and 4.77, $p < 0.01$, two-tailed, respectively).

Our findings suggest that corporate giving can serve as an effective lever for motivating employee effort and contributions to organizational endeavors. Corporate giving can increase the efficacy of implicit (relational) contracts and perhaps reduce the need for formal accounting-based reward systems and controls. Our results also indicate that corporate giving can further alleviate moral hazard problems via its effect on adverse selection. Collectively, our results add to the growing stream of research examining issues surrounding corporate social responsibility (Eldenburg et al. 2009).

Our study is subject to several limitations. For example, we allowed charitable giving percentages to range from 0 percent to 100 percent. We made this design choice because the strategy elicitation method we employed enabled us to consider the full range of giving choices, even though only one giving percentage would actually be implemented. This design choice also allowed us to more completely examine the tensions that exist when splitting the pie among three parties. In the real-world, most organizations give only a small portion of their profits to charity, implying that charitable giving often does not, to the extent examined in our reward condition, constrain the surplus to be split between employees and employers. Accordingly, employees' responses to charitable giving are likely not as affected by surplus considerations in the real world, attenuating any effects associated with this force. We do note, however, that pie-size considerations seem to play a role even at low levels of charitable giving. For employees in the reward condition who do not believe giving to charity is important, contributions decreased markedly from the 0 percent to the 10 percent charitable giving levels. This point notwithstanding, the results we observe at lower levels of charitable giving are likely to have the highest external validity.

Other limitations of our study provide opportunities for future research. First, to isolate employees' primitive responses to corporate giving practices that are unconfounded by employer decisions during the experiment, we conducted a single-interaction experiment. While our results suggest that, even within a single-interaction setting, employees appear to anticipate employers' reward behavior and employers anticipate employees' response to corporate giving practices, future research could explore the robustness of our findings to repeated interaction. Second, our experiment split the contribution to charity equally between the charities selected by the employer and the employee. Future research could examine whether removing employees' choices about where to direct the fruits of their efforts and/or being forced to contribute to employer-chosen charities (which are features that we sometimes observe in natural settings) affects our results. Finally, future research could examine the robustness of our results to the strategy elicitation method we employed. This method confers advantages (as discussed above) and, because we observe three different patterns of contributions across our three treatment conditions, it is unlikely that this method had any systematic effects on employee contributions. Nevertheless, the strategy elicitation method adds a layer of complexity to the experiment that could limit the extent to which our results generalize to real-world settings.

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The Learning Effects of Monitoring

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ABSTRACT: This study investigates the relationship between monitoring, decision making, and learning among lower-level employees. We exploit a field-research setting in which business units vary in the "tightness" with which they monitor employee decisions. We find that tighter monitoring gives rise to implicit incentives in the form of sharp increases in employee termination linked to "excessive" use of decision-rights. Consistent with these implicit incentives, we find that employees in tightly monitored business units are less likely than their loosely monitored counterparts to: (1) use decision-rights; and (2) adjust for hard information, in the form of historical performance data, in their decisions. These decision-making patterns are associated with large and systematic differences in learning rates across business units. Learning is concentrated in business units with "loose monitoring" and entirely absent in those with "tight monitoring." The results are consistent with an experimentation hypothesis in which tight monitoring of decisions leads to more control but less learning.

Keywords: *management control; monitoring; learning; decentralization; incentives; decision-rights.*

Data Availability: *The data used in this study cannot be made publicly available due to confidentiality agreements with the participating organization.*

I. INTRODUCTION

It is well understood that management control choices in organizations need to balance the encouragement of effective decision making with the mitigation of risky outcomes due to either poor decisions or employee opportunism (Baiman 1990; Simons 2000; Merchant and

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Van der Stede 2007). However, an additional consideration that is often overlooked in the academic literature is that management control choices that alter employee decision making can also have a powerful influence on *learning* (Sprinkle 2000; Lee et al. 2004; Campbell 2008). We add to the limited literature on this topic by investigating the relationship between monitoring and the decision-making patterns and learning rates of lower-level employees.

Determining appropriate management controls for lower-level employees is an important issue for most organizations. These employees often have unique knowledge about an organization's individual customers, its local markets, and its production processes. The delegation of decision-rights to such employees can allow organizations to gain the benefits from effective and timely use of local information without incurring the costs of collecting and transmitting this information to top management (Jensen and Meckling 1992; Nagar 2002). This delegation, however, comes with the management control problem of ensuring that employees use their decision-rights in the best interest of the organization (Hwang et al. 2009; Ortega 2009).

One mechanism that is widely used across organizations to achieve management control in this context is direct monitoring of employee decision making via management reports or other review processes. For example, bank officers may have discretion in underwriting consumer loans, but most banks have in place "exception reports" that flag loans underwritten outside of formal guidelines for further review (Casas Arce et al. 2010). Similarly, a local sales representative may have wide latitude in granting price discounts to local clients, but headquarters may have guidelines in place for flagging and reviewing "excessive" price discounting. We focus this study on the decision-making and learning implications of this form of exception-report monitoring.

These types of monitoring mechanisms are likely to have a direct influence on employee decision making. Employees facing more "evaluative pressure" are less prone to opportunism and less likely to experiment or make risky decisions, preferring instead the certainty of managing toward explicit guidelines (Nagin et al. 2002; Lee et al. 2004; Hunton et al. 2008).

Turning to the focus of this study on learning in the decentralized use of decision-rights, the implications of monitoring in this context are less clear. As employees use their decision-rights, they may learn over time the conditions under which their decisions are effective. If monitoring leads to less use of discretion by employees, then they are, in effect, performing fewer "experiments" and have fewer opportunities to learn (Lee et al. 2004). This "experimentation hypothesis" would predict negative learning implications of increased monitoring. Alternatively, if the threat of detection inherent in monitoring leads employees to be more selective in utilizing decision-rights or to expend more effort in learning how to use them effectively, then monitoring would lead to enhanced learning. This "selective utilization" hypothesis would predict positive learning implications of increased monitoring. Which of these alternatives is likely to prevail is an open empirical question that we address.

Our findings, based on field and quantitative data from the MGM-Mirage Group, generally point to a trade-off between employee learning and the intensity by which their decisions are monitored by superiors. Employees in "tightly monitored" business units face strong implicit incentives to experiment less by deviating less often from explicit decision guidelines and have fewer opportunities to learn. Consistent with the experimentation hypothesis, these decision-making patterns are associated with large and systematic differences in learning rates across business units, with learning concentrated in those with "loose monitoring" and entirely absent in those with "tight monitoring."

This study contributes to managerial accounting research by documenting how monitoring can influence the implicit incentives faced by employees in ways that alter both their decision-making patterns *and* rates of learning. With the exception of a few studies, the relationship between management control choices and learning is a topic that has been largely unexplored in the accounting literature (Sprinkle 2000; Campbell 2008). Similarly, much of the literature on learning in organizations has documented variation in rates of learning both within- and across-organizations, but, with the exception of a handful of studies, has been relatively silent about the sources of this variation (Pisano et al. 2001; Lapre and Tsikriktsis 2006; Wiersma 2007). Our results contribute to this literature by documenting systematic variation in rates of learning attributable to differences in management control practices across business units.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

This study draws on, and extends, two broad and related research streams: (1) studies on learning by experience and the "learning curve," and (2) theoretical and empirical work on monitoring and its influence on behaviors related to experimentation, risky decision making, and opportunism, all of which we view as potentially important *antecedents* to learning.

Learning by Experience and Variation in the "Learning Curve"

The literature on organizational learning is large and diverse. Learning has been documented at the individual, team, business unit, and organizational levels, and has been attributed to a variety of different underlying sources of knowledge acquisition ranging from deliberate organizational search processes to learning by experience (Huber 1991; Dodgson 1993).

Our study focuses on differences in individual rates of learning across business units with different control structures and is most conceptually related to the literature on learning by experience. Collectively, this literature has shown a fairly robust relationship between cumulative experience and performance improvement. This "learning curve" phenomenon has been documented in a variety of contexts and with respect to a variety of different measures of experience (e.g., production volume, time) and performance (e.g., cost reduction, customer satisfaction) (Argote and Epple 1990; Pisano et al. 2001; Lapre and Tsikriktsis 2006).

Beyond demonstrating the existence of learning, this literature has also documented significant variation in rates of learning both across- and within-organizations (Jarmin 1994; Pisano et al. 2001; Lapre and Tsikriktsis 2006; Wiersma 2007). Learning curves vary with labor versus capital intensity (Adler and Clark 1991); the degree of vertical integration (Sorenson 2003); the degree of task heterogeneity (Wiersma 2007); and the explicit (e.g., bonus) and implicit (e.g., promotion) incentives faced by individuals (Sprinkle 2000; Campbell 2008). We extend this line of inquiry to examine monitoring as a factor that can have an important influence on individual rates of learning within organizations.

Monitoring and Antecedents to Learning

Studies on actual rates of learning within organizations have been relatively silent on the role of monitoring and other management control choices. There has been more progress in this area within a diverse literature that recognizes experimentation—defined generally as a trial-and-error process in which each trial generates new insights—as an important *antecedent* to learning (Sitkin 1992; Thomke 1998; Thomke et al. 1998). Prior studies have shown that perceptions of evaluative pressure, arising from the degree to which an organization's formal and informal reward systems are viewed as punishing failure, negatively influence the likelihood of experimentation (Edmondson 1999; Lee et al. 2004). Our study is conceptually related to these in that we focus on monitoring as a mechanism that can give rise to evaluative pressure. We also characterize the use of decision-rights as a form of experimentation in which employees can deviate from formal decision guidelines, observe outcomes, and learn about the quality of their decisions. However, unlike our study, which focuses on monitoring as an explicit management control choice, these prior studies rely largely on individual perceptions of evaluative pressure. The actual underlying reward systems and management control structures that affect experimentation are typically not well specified.

The accounting literature focuses on the related issue of managerial willingness to undertake risky investment projects (Baiman 1990; Lambert 2001). Similar to the notion of experimentation, risky investment decisions involve *ex ante* uncertainty about outcomes and potential *ex post* opportunities to learn from "mistakes." This literature speaks more directly to the impact of monitoring, which has been shown in experimental settings to reduce participants' willingness to undertake risky investment projects (Hunton et al. 2008). A related literature in economics has shown reductions in employee opportunism due to increased monitoring (Wiseman and Gomez-Mejia 1998; Nagin et al. 2002).

In general, these literatures document the potential influence of monitoring on experimentation, risky decision making, and employee effort—all of which can be important antecedents to learning—but do not make the link to actual learning within organizations. Our study helps fill this gap by focusing on the relationship between monitoring, decision making, and actual individual rates of learning by experience. Similar to Hunton et al. (2008), we focus on monitoring intensity and frequency rather than on its "style" (e.g., evaluative versus coaching). Throughout this study, we use the terms "tight" and "loose" monitoring to differentiate between business units in which monitoring is relatively more or less intense and frequent, respectively.

Hypotheses on the Relationship between Monitoring, Decision Making, and Learning

Several potential predictions emerge from these literatures regarding the relationships between monitoring, decision making, and learning. Turning first to the relationship between monitoring and decision making, there are at least two potential effects of tight monitoring: (1) employees may be less likely to use decision-rights in general; and (2) employees may be more or less likely to incorporate "hard" information into their decisions. Based on the literature reviewed above, the first effect is straightforward: employees who perceive that they are more likely to be penalized for mistakes are less likely to "experiment," preferring instead to manage toward explicit guidelines. More formally:

> **H1:** Decision-rights are exercised less frequently in business units with tight monitoring than in those with loose monitoring.

The second effect is not as straightforward. In many settings, employees have access to local information that can signal when decision-rights should be exercised to exceed guidelines. Such local information can be "hard"—that is, verifiable and objective—or "soft"—that is, subjective and unverifiable (Ijiri 1975; Demski 1994). Hard information might include, for example, historical performance data on customers in the firm's database or on the success of past projects undertaken by an employee. Soft information can be in the form of an employee's unique knowledge about an organization's individual customers, its local markets, or its production processes. To the extent that hard information can be used as a verifiable basis for exercising decision-rights, employees may be more likely to incorporate it in their decision making in tight monitoring environments. In particular, if employees face performance pressure via implicit or explicit incentives but feel restrained from making decisions based on unverifiable soft information, then they may be more willing to exercise decision-rights when justified by hard information that is verifiable to superiors. Alternatively, the employee's final judgment—what he/she concludes about the appropriate decision after observing hard information—can itself be viewed as soft information that is difficult to credibly communicate to superiors (Stein 2002). In this case, employees in tight monitoring environments may be less likely to incorporate "hard" information into their decisions. Because of the difficulty in making a directional prediction, we state the following two-sided hypothesis in null form:

> **H2:** There is no difference in the use of hard information for decision making between business units with tight monitoring and those with loose monitoring.

Turning next to learning, our characterization of the exercise of decision-rights as a form of "experimentation" coupled with the documentation of learning curves across a variety of settings as noted in the literature reviewed above suggests that, on average, we should also expect to find evidence of learning in the decentralized use of decision-rights. In particular, we expect that the quality of employee decisions should improve as they gain experience exercising decision-rights, observing outcomes, and learning from both successful and unsuccessful decisions. More formally:

> **H3:** The effectiveness with which decision-rights are exercised is increasing in employee experience.

Predictions on the relationship between monitoring and learning are less straightforward. Per H1, the arguments from the literatures on experimentation and risky decision making in organizations would predict that more intensive monitoring would lead employees to use decision-rights less frequently and, in effect, perform fewer "experiments." The resulting reduction in experimentation via the exercise of decision-rights would lead to reduced opportunities for learning. This "experimentation hypothesis" would predict negative learning implications of increased monitoring. Alternatively, theoretical models of information acquisition within organizations have distinguished between employee effort aimed at *collecting* decision-relevant information versus *using* such information effectively on the organization's behalf (Lambert 1986; Demski and Sappington 1987). If the threat of detection inherent in monitoring leads employees to not only supply more productive effort as in Nagin et al. (2002), but also expend more effort in *pre-decision information collection* activities, then monitoring could lead to enhanced learning via experience in this task. Employees could use decision-rights less frequently but do so more selectively based on better pre-decision information. This "selective utilization" hypothesis would predict positive learning implications of increased monitoring. Because of these competing predictions on the direction of the relationship between monitoring and learning, we state the following two-sided hypothesis in null form:

> **H4:** The rate of improvement in the effectiveness with which decision-rights are exercised as employees gain experience is no different in business units with tight monitoring than those with loose monitoring.

III. RESEARCH SETTING

To investigate these hypotheses, we exploit a field-research setting in which: (1) employees' use of decision-rights can be directly measured and traced to performance outcomes, and (2) employees work in distinct business units that vary in the intensity with which decisions are monitored. Specifically, the data for this study come from six of the major hotel properties of MGM-Mirage Group. As of the time of this study, the group operates numerous properties within Las Vegas and across the United States and Asia. Although these properties have been united under the same corporate group through a series of acquisitions, each property retains its own personality and is managed independently of other MGM-Mirage holdings. The typical property in the group includes a casino, which offers activities such as table games, slot machines, and video poker; a hotel, which ranges in size to over 5,000 rooms, and entertainment offerings including live shows, restaurants, bars, and nightclubs.

Customer Profitability

Properties in the MGM-Mirage Group place great emphasis on managing the profitability of their gaming (i.e., casino) customers. Each property tracks customer gaming behavior and performance in detail through the "Players Club" loyalty card and associated database. The Players Club database also tracks all "comps" (complimentary benefits), which may include reduced hotel and entertainment costs, free restaurant meals, or tickets for a show. Customers receive comps based on both the money they wager—a figure that determines their current profitability—and expected future gaming behavior. MGM executives commonly refer to customers by their expected gambling expenditures per trip. For example, a luxury suite might be offered to a "$30,000 per-trip customer." The basic components of gaming customer profitability are the gaming standard margin and the comps.

The basis of gaming customer profitability is the casino's so-called "theoretical win" from the customer—the margin that the property could *theoretically* make from the amount the customer bet based on the mix of games played and their respective house advantage—not the "actual win." One employee explained that the group did not want to penalize lucky customers: "[W]e don't care if you win or lose, as long as you give us a shot at your money."

The dollar amounts bet are recorded differently at slot machines and table games. Slot machine play is recorded in great detail by the Players Club card, which the customer inserts in the machine. In contrast, for table games—e.g., blackjack, roulette, or craps—floormen "rate the play" of the customers on handwritten slips, which reflect the floormen's assessment of the average bet, time played, and speed of play. Properties are able to trace around 65 percent of all slot revenues and 85 percent of all table revenues to individual Players Club customers.

Data captured in the database via the Players Club card cover more than ten years of operations and more than eight million customers. In the calculation of customer profitability, costs such as operations and marketing personnel, equipment maintenance, and real estate are not assigned to the customer.

Comps

Comps are considered a customer-specific expense because they are used to reward gaming behavior. Gaming customer profitability is calculated by subtracting the comps from the theoretical win. If the comps are soft costs in the form of complimentary services provided by the property, then they are recorded at the value at which they are purchased by full-paying customers. Any other complimentary service that implies a payment to an outside provider (for instance, reimbursements for plane tickets) is recorded at its full amount.

Casino Hosts

Individual properties rely heavily on employees known as "casino hosts" in order to initiate, manage, and ensure the profitability of customer relationships. Hosts interact with all segments of customers whose gambling levels justify comps. Prior to a trip, many customers call their host to arrange for room and show reservations. One host explained that she is the "go-to person in Vegas" for her clients, getting them priority tickets and access to "the most coveted clubs." She keeps track of her clients' travel information, greeting them personally when they arrive or arranging for a colleague to meet them if she is away from the property. Moreover, if a client has not visited the property in a while, she calls them "to understand why and bring them back." Hosts use a combination of subjective observation and historical customer data to inform their decisions. New clients flagged by the system by their level of play while at the property or captured by the MGM-Mirage network of branches are randomly assigned to a host. Hosts may also add referrals from existing customers to their portfolio.

Decision-Rights, Monitoring, and Incentives for Casino Hosts

Casino hosts ultimately have decision-rights on the comps awarded to their customers. They are free to choose the comps under the general guideline that the dollar value awarded as a percentage of the customer's theoretical win on the current trip—known as the "comp percentage"—does not exceed 40 percent. This explicit definition of decision-rights for casino hosts appears to be common practice in the industry. According to one highly experienced senior executive we interviewed, "[T]he general rule of thumb in the industry is 40 percent for the maximum comp percentage. This has been true for at least the past 20 years." However, if the host believes that a customer is likely to be highly profitable in the future, s/he can, and often does, use decision-rights to award comps in excess of the 40 percent limit. In these cases, an "exception report" is triggered for review by the CFO of the property. The exception report and associated review process is the primary mechanism used to monitor host comp decisions within each property.

The level and type of comps awarded to a customer on a given trip are typically agreed upon between the host and the customer at the start of the trip based on the expected gaming behavior. If *ex post* customer play does not meet the expected level, then the host can adjust the comp award downward to meet the 40 percent threshold. For example, as one host noted, "Customers can sweet-talk you into getting a suite, but if their play doesn't justify it in the end, you can make adjustments to the expenses we will and will not cover."

Interestingly, all incentives for hosts to directly manage the key decision variable of comp percentage appear to be implicit rather than explicit. Although there is no formulaic relationship between the hosts' bonuses and performance indicators, the incentive plan for casino hosts at MGM-Mirage's properties explicitly indicates that the hosts' annual bonus will be determined by the following criteria: 60 percent is based on total gaming revenues for the property, consistent with an objective to reward teamwork; 15 percent on individual goals for acquiring new, and reactivating "inactive" customers; and 25 percent on subjective evaluation of the performance of the host by the property's senior management. Incentives to limit comp awards appear to be determined primarily by the exception report review process, but may also depend on managers' view of comp levels in the subjective evaluation component of the bonus plan.

The Casino Host Decision Process

As part of this study, we interviewed several casino hosts across properties and "shadowed" some of them as they performed their work. Our observations revealed several interesting characteristics of the host decision-making process.

First, hosts take a *dynamic rather than static view of the financial performance of customer relationships*. One host explained: "I usually give it a couple of trips to see what happens. I want to see how that customer is likely to perform over the next year or so. When I overcomp a customer, I am looking at what that will mean for [his/her] profitability for the entire year." Many hosts also spoke of customer loyalty, with one noting that he can usually evaluate loyalty "within three to six trips." In short, it is clear that hosts' expectations of future customer performance shape their individual comp decisions and that they think of customers in terms of "relationships." One host described using comp discretion "based on longevity and what I know about the customer"; another noted that it can be difficult to separate "the social relationship versus the business relationship."

Second, hosts *vary greatly in the relative extent to which they base their discretionary comp decisions on "hard" information* contained in the firm's database, such as average theoretical win in the last "N" trips, versus *"soft" information based on local knowledge of customers*. When asked about how they make comp decisions, hosts' replies included expressions such as "nothing is black and white in what we do, it is all gray," or "sometimes I have to take a shot at a customer." Often, this soft information is in the form of behavioral cues that hosts believe can indicate a potentially valuable customer. For instance, one host looks at body language: "It probably makes sense to focus on the person sitting at the slot machine with his feet up and 500 credits in the machine." While all hosts seem to rely on soft information to some extent, the more experienced hosts that we interviewed appeared more confident in their ability to incorporate such information into their decisions. According to one of these, "good customers play differently. I've been here a long time, and I just know when it makes sense to overcomp."

Third, we observed considerable *heterogeneity in the heuristics hosts have developed for incorporating hard information* from the database into their comp decisions, as illustrated by the following comments: "I tend to do more of a trip-by-trip evaluation"; "I look at the past four trips, throw out the lowest one, and take the average of the remaining three. I'll then update based on current play"; and "I look at both year-to-date theoretical win and lifetime-to-date."

Finally, *hosts tend to think carefully about the future customer-behavior implications of their current discretionary comp decisions*. Customers are often very conscious of the comps they receive for their play. As one host noted, "people read books [on Vegas] and ask what they need to do to get this or that. Once you have given too much to a customer, you are stuck. When you get them back to their natural level, they think you have taken away from them."

Data

The Players Club database contains data for more than nine million customer-trips between 1993 and 2004. To focus on host-level decision making and learning, we restrict our sample to the 349,887 customer-trip observations with an assigned casino host. We exclude from our study customers who choose not to interact with hosts and those whose level of play does not warrant host interaction.

In several cases in the data, one-time customers with zero or very low levels of theoretical win (e.g., due to limited gaming, small bets) received comps valued in the tens of thousands of dollars. We eliminate these observations—which are likely attributable to family or friends of highly valuable customers—to arrive at our final sample.[1]

For each trip-level observation, we observe the unique identity of the host interacting with the customer, the theoretical win for the customer on the trip, and the dollar value of comps awarded to the customer for that trip. Because we observe data from 1993 (the first year of the firm's Players Club program and database) onward, we can reconstruct each host's history of interactions with individual customers.

Tight versus Loose Monitoring Classification of Properties

An important feature of this site for our research purposes is that properties vary substantially in the intensity with which host decisions are monitored through the exception-reporting process. Hosts have decision-rights to award comps in excess of the 40 percent limit to manage the lifetime value of a customer. However, the "exception report" triggered by each such event is sent to the property CFO and provides information on the type and dollar value of comps awarded along with the customer's current and historical theoretical win.

We characterize some properties as having "loose monitoring." In these properties, the exception report is used in a relatively lax way. One representative property CFO said the report was used mainly to detect egregious cases of comps misuse, and another reported that reviews of the reports were delegated to the director of player development. In these properties, management actions with respect to hosts usually took a broad perspective: "[I]f we observe hosts systematically exceeding the 40 percent limit, we call them in to discuss their performance and develop an action plan when necessary." By contrast, properties that we characterize as having "tight monitoring" use exception reports to monitor employee decision making more intensively. A CFO of one such property explained: "I review the report every day and email the hosts, who have a week to respond. If I see something strange, I call the host right away." Another noted: "I ask hosts for a written explanation of all comps that are \$200 or 5 percent above the limit. I read every single explanation and I further question about 10 percent of them."

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[1] We eliminate data from trips in which a player was awarded comps that were greater than 20 times the current trip theoretical win and in which a player was awarded comps when theoretical win was zero. This eliminates 0.38 percent of our trip-level observations.

We base our definition of tight versus loose monitoring in part on qualitative interview based data as noted above, and also in part on the observed *frequency* of monitoring inherent in each property's exception reporting process.[2] Table 1 provides descriptive information on both types of properties. In tight monitoring properties, host comp decisions are monitored daily by the CFO of the property and a broader review of each host's overall customer portfolio is conducted at the end of each month. In loose monitoring properties, host comp decisions are monitored only once per week and the broader review of a host's portfolio is conducted once per quarter. We shared this classification with several MGM-Mirage Group managers, all of whom found it valid based on their own observations and experience.

It is worth noting that two features of this site point to the relative exogeneity of these differences in control practices for purposes of this study. First, our tests, described in the next section, examine decision making and performance at the *employee* rather than at the property level. Casino hosts operate within a given control system that is exogenous from their perspective. Second, each of the properties were independently founded and brought under the same corporate umbrella through a process of mergers and acquisitions. Our interviews with corporate- and property-level management suggested that these independent histories coupled with path-dependence in management practices, rather than corporate optimization, have led to cross-property differences in control practices.

Validation of Tight versus Loose Monitoring Classification via a Test of Implicit Incentives

As further validation of our classification of tight versus loose monitoring properties, we examine the sensitivity of host exit from a property (*EXIT*) to a variety of measures of host performance. If a property discourages overcomping, then hosts not conforming with the comps guidelines will likely be asked to leave or will voluntarily leave when they realize their behavior is not condoned. To the extent that "excessive" use of decision-rights is linked to departure, hosts will face incentives to limit their discretionary decision making. To examine the potential strength of these implicit incentives, and how they vary for properties with tight or loose monitoring, we estimate the following exit-performance relationship:

$$
\begin{aligned}
P(Exit_{jpt}) = f\Bigg(&\beta_0 + \beta_1 CustomerGrowth_{jpt-1} + \beta_2 TripsPerCustomerGrowth_{jpt-1} \\
&+ \beta_3 TheoreticalWinPerTripGrowth_{jpt-1} + \beta_4 Discretion\%_{jpt-1} \\
&+ \beta_5 Overcomped_{jpt-1} + \beta_6 ExcessComps_{jpt-1} + \beta_7 ExcessComps \\
&\times TightMonitoring_{jpt-1} + \beta_8 Experience_{jpt-1} + \sum_{j=2}^{6} \gamma^j Property_p^j \\
&+ \sum_{k=1994}^{2003} \gamma^k Year_t^k + \varepsilon_{jpt}\Bigg). \qquad (1)
\end{aligned}
$$

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[2] Frequency of monitoring is noted in accounting texts as a general feature of "tight" control systems (Merchant and Van der Stede 2003). Frequency of feedback can also influence perceptions of a loss of personal control by individuals (Ilgen et al. 1979).

TABLE 1

Property and Host Characteristics

	Tight Monitoring									Loose Monitoring								
	Property 1			Property 2			Property 3			Property 4			Property 5			Property 6		
	Mean	Med.	S. D.	Mean	Med.	S. D.	Mean	Med.	S. D.	Mean	Med.	S. D.	Mean	Med.	S. D.	Mean	Med.	S. D.
Trips per Host	457	131	808	509	140	1,043	218	87	470	425	133	942	37	31	82	284	99	1,210
Theoretical Win Per Trip	1,521	1,059	1,491	1,008	627	1,156	423	122	819	869	485	1,108	1,248	853	1,242	1,276	783	1,451
Data Range	1993–2004			1997–2004			1999–2004			1993–2004			1993–2004			1998–2004		
Number of Unique Hosts	62			20			95			62			39			83		
Number of Host-Years	594			131			445			390			269			422		
Number of Host Exits	16			7			13			22			8			20		
Frequency of Comp Exception Reviews	Daily and Monthly			Daily and Monthly			Daily and Monthly			Weekly and Quarterly			Monthly			Weekly and Quarterly		

Our dependent variable, $Exit_{jpt}$, is set equal to 1 if host j departs from property p during year t. We model the probability of departure as a function of a number of host-level performance metrics, including growth in the number of customers in the host's portfolio (*CustomerGrowth*), growth in the number of trips per customer in the host's portfolio (*TripsPerCustomerGrowth*), and growth in theoretical win per trip for these customers (*TheoreticalWinPerTripGrowth*). Because these metrics are primary objectives of MGM-Mirage's properties, we expect each of them to be negatively associated with the probability of departure. All measures are aggregated at the host-year level.

We also include in the specification a number of measures of the extent to which hosts use decision-rights: the annual proportion of individual customer-trips managed by the host in which comps exceeded 40 percent of the theoretical win (*Discretion%*); an indicator for whether the portfolio comp percentage—i.e., the total annual comps awarded by a host divided by the total theoretical win across all customers in the host's portfolio—exceeded 40 percent (*Overcomped*); and a measure of the extent to which a host overcomped customers for the year, taking the value of the portfolio comp percentage minus 40 percent for hosts who overcomped, and 0 otherwise (*ExcessComps*). This last measure captures not only the extent to which a host awarded comps to individual customers outside of the 40 percent guideline, but also the host's failure to absorb any overcomping to individual customers in the overall portfolio. Thus, this measure partially captures the effectiveness of a host's use of his/her decision-rights. As a result, we expect that, all else equal, high levels of this measure should be associated with a higher probability of departure.

We interact *ExcessComps* with *TightMonitoring*, an indicator for whether the host is employed at any of the three properties that we classify as "tight monitoring." If our classification of properties is valid, then we expect that an increase in *ExcessComps* will lead to a higher increase in the probability of departure for properties classified as having "tight monitoring" versus those classified as having "loose monitoring." Thus, estimating Equation (1) allows us to generate counterfactuals on how the continued employment prospects of hosts with similar performance outcomes are influenced by increased comping activity, conditional on whether they are in a tight or loose monitoring property. As additional control variables, we include property indicators, year indicators, and *Experience* measured as the number of years that a host has been employed at a property as of the beginning of each year.

Table 2 contains results from logit estimation of Equation (1). All standard errors are adjusted for clustering of observations within-hosts over time prior to inference. Column (1) demonstrates that hosts who are able to grow their customer base or to improve the theoretical win generated per customer-trip face a lower probability of departure. Managers with higher levels of experience face lower departure probabilities. Holding other performance metrics constant, hosts who are overcomped across all customers in their portfolios (*Overcomped*) are more likely to leave the organization. This increase in the probability of departure is increased further by the degree to which the host is overcomped (*ExcessComps*). Interestingly, *Discretion%* is unrelated to the probability of departure. Overall, these results provide evidence of incentives in this organization whereby the use of decision-rights (*Discretion%*) is not discouraged *per se*, but where hosts face strong implicit incentives for managing the effectiveness with which these decision-rights are used.

The results in Column (2) of Table 2 point to the validity of our classification of properties in terms of tight versus loose monitoring. The coefficient on *ExcessComps* × *TightMonitoring* is positive and significant, suggesting that "overcomping" is more strongly discouraged in the properties that we classify as having tight rather than loose monitoring. The estimates show that a host with the mean levels of all performance measures and operating below the threshold comp percentage of 40 percent has a 0.3 percent probability of departing from the organization. An overcomped host in a loose monitoring property with the mean levels of all performance measures but operating with a portfolio-level comp percentage in the 90th percentile has a probability of departure that is approximately four times higher, at 1.3 percent. By contrast, a similar overcomped

TABLE 2

The Exit-Performance Relation for Properties with Tight versus Loose Monitoring

	Dependent Variable = *EXIT*	
	(1)	(2)
Constant	−2.726**	−2.612**
	(1.15)	(1.15)
CustomerGrowth	−1.483***	−1.607***
	(0.44)	(0.53)
TripsPerCustomerGrowth	0.39	0.377
	(0.44)	(0.42)
TheoreticalWinPerTripGrowth	−0.092**	−0.105**
	(0.04)	(0.05)
Discretion%	−2.186	−2.065
	(1.53)	(1.47)
Overcomped	1.424***	1.275***
	(0.44)	(0.46)
ExcessComps	0.001**	0.001**
	(0.00052)	(0.00056)
ExcessComps × *TightMonitoring*		0.004***
		(0.00145)
Experience	−1.037***	−1.010***
	(0.17)	(0.18)
Property Fixed Effects	+++	+++
Year Fixed Effects	+++	+++
Pseudo R^2	0.41	0.42
Implied Probabilities		
Overcomped = 0, and all other variables at mean		0.003
Overcomped = 1; *ExcessComps* in 90th percentile; Loose Monitoring Property		0.013
Overcomped = 1; *ExcessComps* in 90th percentile; Tight Monitoring Property		0.063

, * Denotes significance at the 5 percent and 1 percent levels, respectively.
+++ Denotes jointly significant at the 1 percent level using χ^2 test.
Standard errors in parentheses are adjusted for clustering of observations within hosts over time.
Table 1 reports logit estimates of Equation (1) using data on 1,189 host-year observations.
The model used for estimation is:

$$P(Exit_{jpt}) = f\Bigg(\beta_0 + \beta_1 CustomerGrowth_{jpt-1} + \beta_2 TripsPerCustomerGrowth_{jpt-1} + \beta_3 TheoreticalWinPerTripGrowth_{jpt-1} + \beta_4 Discretion\%_{jpt-1} + \beta_5 Overcomped_{jpt-1} + \beta_6 ExcessComps_{jpt-1} + \beta_7 ExcessComps \times TightMonitoring_{jpt-1} + \beta_8 Experience_{jpt-1} + \sum_{j=2}^{6} \gamma^j Property_p^j + \sum_{k=1994}^{2003} \gamma^k Year_t^k + \varepsilon_{jpt}\Bigg)$$

The main effects of *TightMonitoring* are controlled for via property fixed effects.

Variables Definitions:
Exit = 1 if host departs from a property in the subsequent year, 0 otherwise;
CustomerGrowth = annual growth in the number of customers managed by the host over the prior year;
TripsPerCustomerGrowth = annual growth over the prior year in the average number of trips taken to a property by customers managed by the host;
TheoreticalWinPerTripGrowth = annual growth over the prior year in the average theoretical win per trip for all customers managed by the host;

(continued on next page)

TABLE 2 (continued)

Discretion% = percentage of all customer-trips managed by the host during the year in which comps were awarded in excess of 40 percent of the trip-level theoretical win;
Overcomped = 1 if total comps awarded by the host to all customers in a given year is greater than 40 percent of the aggregate theoretical win across all customers managed by the host for that year, 0 otherwise;
ExcessComps = [100 × (total comps awarded by the host to all customers in a given year divided by the aggregate theoretical win across all customers managed by the host for that year) − 40] when *Overcomped* = 1, and 0 otherwise;
TightMonitoring = 1 if the host is employed at properties 1, 2, or 3, and 0 otherwise; and
Experience = number of years of host experience at property as of the start of the year.

host in a tight monitoring property has a probability of exiting the organization of 6.3 percent, an almost five-fold increase, as compared to a host in a loose monitoring property.[3]

In summary, the results in this section provide support for the validity of our tight versus loose monitoring classification, which appears to capture real differences in the implicit incentives faced by hosts when exercising their decision-rights.

IV. TESTS AND RESULTS

Tests of Decision Making and the Tight versus Loose Monitoring Effect (H1–H2)

To test H1, that is whether employees' use of decision-rights is curtailed by tight monitoring, we compare the mean levels of a variety of different measures of the extent to which hosts utilize their decision-rights across tight and loose monitoring properties. These measures include *Discretion%* and *Overcomped* as described in the previous section, as well as a measure of the total annual comps awarded by a host divided by the total theoretical win across all customers in the host's portfolio during the same year (*Comp%*).

To test H2, that is whether employees' reliance on "hard" information is different across tight versus loose monitoring properties, and as an additional test of H1, we develop and estimate an empirical model of host decisions at the individual customer-trip level. As is clear from the qualitative evidence presented in Section III, hosts vary significantly in both how, and the horizons over which, they combine "hard" (e.g., historical information on customers in the firm's database) and "soft" (e.g., direct observation of customer behavior) information in their decisions. Capturing the complexities of these decisions in observable data is nontrivial. As an approximation, we characterize the casino host decision process as:

$$COMP_{ijpt} = \beta_1 TheoreticalWin_{ijpt} + \beta_2 E_j\left(\sum_{k=1}^{T_i} TheoreticalWin_{ipt+k}\right) \tag{2}$$

where $COMP_{ijpt}$ is the dollar value of comps awarded to customer i by host j at property p during trip t. In this characterization of their decision process, hosts determine the dollar value of comps to award a customer based on two pieces of information: the observed theoretical win of the customer on the current trip ($TheoreticalWin_{ijpt}$) and the host's expectation of the customer's future theoretical win at the property:[4]

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[3] We also estimated a version of Equation (1), which allowed separate coefficients on *ExcessComps* for each property. Coefficients for each tight monitoring property are larger than those for each loose monitoring property. The implied marginal effects for hosts with excess comps in the 90th percentile relative to those within the comp guideline of 40 percent holding all other variables at their mean are 0.30 percent, 1.04 percent, and 1.58 percent for loose monitoring and 3.65 percent, 6.51 percent, and 8.08 percent for tight monitoring properties, respectively. All effects other than the 0.30 percent estimate are significant at least at the 10 percent level.

$$\left(E_j\left(\sum_{k=1}^{T_i} TheoreticalWin_{ipt+k}\right)\right).$$

The customer's future theoretical win at the property is determined by both the level of the theoretical win per trip and the number of future trips to the property by the customer (T_i). If hosts simply award comps to customers based on their observed level of play during the current trip without using their decision-rights to exceed the 40 percent limit, then $\beta_2 = 0$ and $\beta_1 \leq 0.40$. Alternatively, if hosts use discretion to deviate from the prescribed 40 percent limit based on their expectations about the customer's level of future theoretical win at the property, then $\beta_2 > 0$ and $\beta_1 \leq 0.40$.

Consistent with our interviews and observations, we assume that hosts form expectations about future customer performance at the property based, in part, on hard information in the form of historical data on the customer's theoretical win, or:[5]

$$\sum_{s=1}^{L_i} TheoreticalWin_{ipt-s}.$$

For empirical purposes, we set L_i equal to the number of trips the customer has taken to the property within the 18-month period prior to the current trip, a choice we make for two primary reasons. First, regardless of whether the customer remains active and how active they remain over the 18 months subsequent to the current trip appear to be salient criteria for decision making in our setting. Second, while many hosts suggested that they consider the entire history of customer data in their decision making, they almost universally noted that they discount information that is greater than 18 to 24 months old. Hereafter, for each customer-host-property-trip observation, we refer to:

$$\sum_{s=1}^{18} TheoreticalWin_{ipt-s},$$

as *LagTheoreticalWin*. For our empirical tests of H1 and H2, we estimate the following baseline version of Equation (2):

$$\begin{aligned} COMP_{ijpt} = {} & \hat{\beta}_1 TheoreticalWin_{ijpt} + \hat{\beta}_2 LagTheoreticalWin_{ipt} + \sum_{j=2}^{6} \gamma^j Property_p^j \\ & + \sum_{k=1994}^{2003} \lambda^k Year_t^k + \mu_j + \varepsilon_{ijpt}, \end{aligned} \tag{2'}$$

where μ_j denotes a host fixed effect controlled for through the use of a series of host indicators, and *Property* and *Year* represent property and year fixed effects, respectively.[6]

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[4] The absence of the j subscript in $TheoreticalWin_{ipt+k}$ is intentional and captures the notion that hosts have incentives to bring customers back to the property even if that customer switches hosts in the future.

[5] The absence of the j subscript in $TheoreticalWin_{ipt-s}$ is intentional and captures the notion that hosts are simply using the customer's past level of performance at the property to make inferences about performance in the future. The past performance of the customer need not be the result of trips in which the customer interacted with the host making the decision on the current trip.

[6] Property fixed effects are largely subsumed by host fixed effects. However, there are 18 hosts who switch properties during our sample period. In practice, after controlling for host fixed effects, the property fixed effects are estimated based on data from this small sample of "switchers." Not surprisingly given the small number of switchers, our results are not sensitive to either the omission of property fixed effects or to the omission of this small sample of switchers from the analysis.

This characterization of the host decision process has intuitive appeal. Conditional on the customer's current level of play, hosts increase (decrease) the comp awarded when the customer's past level of play is high (low), which signals that the current trip is a deviation from a pattern of performance established by the customer in past trips.

To examine whether employees in tight monitoring environments are less likely to exercise decision-rights in general (H1), we estimate a version of Equation (2′) where we allow the empirical weight, $\hat{\beta}_1$, on current trip theoretical win to vary for tight versus loose monitoring properties with the expectation that the estimated weight would be lower in the former versus the latter. That is, tightly monitored employees are expected to award lower comps for a given level of current-trip theoretical win on average. To examine whether employees in tight monitoring environments are more or less likely to exercise decision-rights based on hard information (H2), we also estimate a version of Equation (2′) where we allow the empirical weight, $\hat{\beta}_2$, on historical theoretical win to vary for tight versus loose monitoring properties. Significantly different weights in tight versus loose monitoring properties would provide evidence in favor of rejecting the null form of H2.

Tests of Learning and the Tight versus Loose Monitoring Effect (H3–H4)

Documenting learning in the decentralized information-processing activities of our sample of casino hosts requires that we develop an empirical model to identify how the link between their decisions and performance outcomes varies as hosts gain experience. To the extent that hosts develop skill in incorporating unobservable (to the researcher) local information in their comp decisions, these decisions should be correlated with actual realizations of future customer performance after controlling for observable historical customer performance leading to the following empirical specification:

$$\begin{aligned} TheoreticalWin_{ijpt} = {} & \beta_1 TheoreticalWin_{ijpt-1} + \beta_2 Comps_{ijpt-1} + \beta_3 Comps_{ijpt-1} \times Experience_{jt} \\ & + \beta_4 Experience_{jt} + \sum_{j=2}^{6} \gamma^j Property_p^j + \sum_{k=1994}^{2003} \lambda^k Property_t^k + \mu_j + \varepsilon_{ijpt} \end{aligned} \quad (3)$$

where the i, j, p, and t subscripts denote customer, host, property, and time, respectively, and μ_j denotes a host fixed effect.

Equation (3) is our basis for identifying learning in the exercise of decision-rights by casino hosts. If hosts are, on average, skilled at incorporating local information that is informative of future customer performance into their comp decisions (*Comps*), then we expect $\beta_2 > 0$ since hosts deviate from basing comp decisions purely on historical customer performance ($TheoreticalWin_{ijpt-1}$) only when future customer performance ($TheoreticalWin_{ijpt}$) is expected to be high. If ability in incorporating local information into comp decisions increases as hosts gain experience, then the relationship between these decisions and future performance should increase with experience. This implies $\beta_3 > 0$, which will serve as our primary test of H3.

We test for differential rates of learning in the exercise of decision-rights (H4) by estimating a version of Equation (3) in which the learning effect, β_3, is allowed to vary for properties with tight versus loose monitoring. A significantly higher estimate in the latter would provide evidence in favor of the "experimentation" hypothesis while a significantly higher estimate in the former would provide evidence in favor of the "selective utilization" hypothesis.

We estimate Equation (3) in two ways. First, we aggregate all data up to the annual host portfolio level and analyze whether hosts' investments into their customer portfolios, in the form of comp awards, lead to increased future theoretical win at the portfolio level. For this specification, we measure *Experience* as the number of years a host has been employed at a property at the beginning of each year. *Comps* and *TheoreticalWin* are measured as the total comps awarded to and the total theoretical win of the host's portfolio of customers during the year, respectively. *Comps* and *Experience* are mean centered prior to interaction to maintain interpretability of coefficients. To avoid bias due to the inclusion of the lagged dependent variable, we estimate the model using the generalized method-of-moments dynamic panel data model of Arellano and Bond (1991).

Our second approach to estimating Equation (3) is to aggregate data at the customer-host-property-year level. Exploiting customer-level data allows us to use alternate measures of experience to capture different types of learning. Specifically, we estimate a version of Equation (3) in which experience is decomposed into general experience (*ExpGeneral*), measured as the cumulative number of all customer-trips handled by the host up to the start of the current year, and customer-specific experience (*ExpSpecific*), measured as the cumulative number of trips handled by the host for a specific customer up to start of the current year. Both types of experience are potentially important. Employees have multiple opportunities to learn about the performance consequences of their discretionary decisions from general experience interacting across customers, but customer heterogeneity can limit the extent to which such learning is transferable across customer relationships. Conversely, employee experience interacting with specific customers should lead directly to better discretionary decisions as employees learn about the performance consequences of their decisions for those customers.[7]

Results on Decision Making and the Tight versus Loose Monitoring Effect (H1–H2)

Turning first to the question of whether employees in tight monitoring environments are less likely to exercise decision-rights in general (H1), the results presented in Table 3 demonstrate that this is indeed the case across a variety of different measures of the extent to which hosts utilize their

TABLE 3

Use of Decision-Rights for Properties with Tight versus Loose Monitoring

		Properties With:		
	All Properties	**Tight Monitoring**	**Loose Monitoring**	**t-test for Difference**
Discretion%	23.7	19.6	29.2	4.43***
	(21.8)	(19.3)	(23.8)	
Overcomped	0.235	0.139	0.368	7.35***
	(0.424)	(0.346)	(0.482)	
Comp%	45.8	35.6	59.8	3.21***
	(1.2)	(1.0)	(1.4)	

*** Denotes significance at the 1 percent level.
Standard deviations in parentheses.
Table reports mean for each host-year level variable across 2,251 host-year observations.

Variable Definitions:
Discretion% = percentage of all customer-trips managed by the host during the year in which comps were awarded in excess of 40 percent of the trip-level theoretical win;
Overcomped = 1 if total comps awarded by the host to all customers in a given year is greater than 40 percent of the aggregate theoretical win across all customers managed by the host for that year, 0 otherwise; and
Comp% = total comps awarded by the host to all customers in a given year divided by the aggregate theoretical win across all customers managed by the host for that year.

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[7] We aggregate data at a variety of different levels for the various tests conducted in this study ranging from the individual customer-trip level to the host-year level. Full correlation tables for the variables used in each empirical test are available from the authors on request.

decision-rights. As measured by *Discretion%*, hosts in tight-monitoring properties are less likely to exceed the 40 percent comp guidelines than are those in loose-monitoring properties (mean for tight-monitoring properties = 19.6 percent; mean for loose monitoring properties = 29.2 percent; difference significant at $p < 0.01$). Hosts in tight monitoring properties are also almost three times less likely than those in loose monitoring properties to be overcomped at a portfolio level (*Overcomped*) in any given year (mean for tight monitoring properties = 0.139; mean for loose monitoring properties = 0.368; difference significant at $p < 0.01$). Finally, hosts in tight-monitoring properties award substantially less comps relative to the theoretical win of their customer portfolios (*Comp%*) in a given year (mean for tight-monitoring properties = 35.6 percent; mean for loose monitoring properties = 59.8 percent; difference significant at $p < 0.01$). Overall, the results in Table 3 provide strong support for H1. By all measures of the extent to which hosts are using decision-rights, discretionary decisions that deviate from comp guidelines are significantly less prevalent in properties we classify as having tight monitoring.

Table 4 presents results from OLS estimation of Equation (2′). We adjust all standard errors for clustering of observations within customers over time prior to inference. The results in Column (1) demonstrate that, on average, hosts weigh both current and past customer information in their comp

TABLE 4

Determinants of the Trip-Level Comp Decision for Properties with Tight versus Loose Monitoring

	Dependent Variable—*Comps*	
	(1)	(2)
TheoreticalWin	0.218***	0.259***
	(0.002)	(0.004)
TheoreticalWin × *TightMonitoring*		−0.061***
		(0.005)
LagTheoreticalWin	0.011***	0.015***
	(0.001)	(0.002)
$LagTheoreticalWin_{t-k}$ × *TightMonitoring*		−0.007***
		(0.002)
Host Fixed Effects	+++	+++
Site Fixed Effects	+++	+++
Year Fixed Effects	+++	+++
Number of Host-Customer-Trips	220,223	220,223
R^2	0.41	0.42

*** Denotes significance at the 1 percent level.
+++ Denotes jointly significant at the 1 percent level using χ^2 test.
Standard errors in parentheses are adjusted for clustering of observations within customers over time.
Table reports OLS estimates of Equation (2′) using host-customer-trip level data.
The baseline model used for estimation is:

$$COMP_{ijpt} = \hat{\beta}_1 TheoreticalWin_{ijpt} + \hat{\beta}_2 LagTheoreticalWin_{ipt} + \sum_{j=2}^{6} \gamma^j Property_p^j + \sum_{k=1994}^{2003} \lambda^k Year_t^k + \mu_j + \varepsilon_{ijpt}$$

Main effects of *TightMonitoring* controlled for via property fixed effects.

Variable Definitions:
TheoreticalWin = theoretical win generated by the customer on the current trip;
LagTheoreticalWin = cumulative theoretical win generated by the customer over the 18 months prior to the current trip start-date; and
TightMonitoring = 1 if host is employed at properties 1, 2, or 3, and 0 otherwise.

decisions. The coefficient estimates show that, conditional on past customer performance, on average, hosts award \$0.218 in comps per dollar of current trip theoretical win—well within the comp guidelines of all properties. On average, the comp award is adjusted upward by \$0.011 per dollar of historical theoretical win. Based on the coefficient estimate on *LagTheoreticalWin*, a customer's past performance would have to be significantly higher than that on the current trip for a host to substantively shift the average comp percentage to be in excess of the 40 percent guideline. For the median customer-trip in our sample, *LagTheoreticalWin* is approximately two times the current trip theoretical win, while it is approximately 16 times current trip theoretical win for customer-trips in the 90th percentile. For the median customer-trip, hosts would, on average, increase the comp percentage by 2.2 percent (2 × 1.1%) to 24 percent, whereas for the customer-trip in the 90th percentile, the comp percentage would, on average, increase by 17.6 percent (16 × 1.1%) to 39.4 percent. Thus, on average, past customer performance would have to deviate significantly from current trip performance for hosts to use decision-rights to exceed formal comp guidelines.

Column (2) of Table 4 contains estimates from a version of Equation (2′) that allows the empirical weights on current and historical customer information to vary for properties with tight versus loose monitoring through the addition of the terms *TheoreticalWin* × *TightMonitoring* and $LagTheoreticalWin_{t-k}$ × *TightMonitoring*. The coefficient on *TheoreticalWin* × *TightMonitoring* is negative and statistically significant (coefficient = −0.061; $p < 0.01$). This result is consistent with our tests of H1 reported in Table 3, indicating that hosts in properties with tight monitoring tend to have lower comp percentages than their loosely monitored counterparts. The coefficient estimates show that, conditional on past customer performance, hosts in properties with loose monitoring award an average of \$0.259 in comps per dollar of current trip theoretical win. The corresponding amount for those in properties with tight monitoring is \$0.198 (0.259 − 0.061).[8]

The coefficient on $LagTheoreticalWin_{t-k}$ × *TightMonitoring*, which serves as our basis for testing H2, is negative and significant (coefficient = −0.007; $p < 0.01$). On average, the comp award is adjusted upward by \$0.015 per dollar of historical theoretical win for loose monitoring properties, as compared to \$0.008 (0.015 − 0.007) for tight monitoring properties. For the median customer-trip in our sample, hosts in loose monitoring properties would on average increase the comp percentage by 3 percent (2 × 1.5%) to 29 percent, whereas for the customer-trip in the 90th percentile, the average comp percentage for hosts in these properties increases by 24 percent (16 × 1.5%) to approximately 50 percent—well over the formal 40 percent guideline. The comparable numbers for hosts in tight monitoring properties are a 1.6 percent (2 × 0.8%) increase in the comp percentage for the median customer-trip and a 12.8 percent (16 × 0.8%) increase for a customer-trip in the 90th percentile of historical theoretical win. These results provide evidence in favor of rejecting the null form of H2, suggesting that hosts in tight monitoring properties tend to adjust comp awards significantly less in response to hard information in the form of historical customer performance than their counterparts in loose monitoring properties.

Results on Learning and the Tight versus Loose Monitoring Effect (H3–H4)

Table 5 reports the results from our estimation of Equation (3). Consistent with the notion that hosts are, on average, skilled at incorporating local information, the estimate of β_2 in Column (1) of Table 5 is positive and statistically significant (coefficient = 1.38; $p < 0.01$). The coefficient

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[8] In untabulated results, we also measured the incremental variation in comps due to variation in current trip theoretical win. Consistent with monitoring leading to less use of decision-rights to deviate from guidelines, current trip theoretical win explains 39 percent versus 31 percent of the within-host and -year variation in comp awards in tight versus loose monitoring properties, respectively.

TABLE 5

Learning and the Return on Comps for Properties with Tight versus Loose Monitoring

	Theoretical Win			
	(1)	(2)	(3)	(4)
Theoretical Win_{t-1}	0.062	0.059	0.06	−0.01
	(0.045)	(0.045)	(0.045)	(0.039)
$Comps_{t-1}$	1.383***	1.241***	1.370***	1.240***
	(0.152)	(0.164)	(0.167)	(0.148)
$Comps_{t-1} \times Experience_{t-1}$		0.043**	0.089***	0.072***
		(0.017)	(0.023)	(0.021)
$Comps_{t-1} \times Experience_{t-1} \times TightMonitoring$			−0.083***	−0.053***
			(0.025)	(0.024)
$Experience_{t-1}$	110.353***	112.739***	91.853***	65.521***
	(18.60)	(18.54)	(19.06)	(11.76)
Year Indicators	+++	+++	+++	+++
Number of Host-Years	1,720	1,720	1,720	1,319
Number of Unique Hosts	324	324	324	301

, * Denotes significance at the 5 percent and 1 percent levels, respectively.
+++ Denotes jointly significant at the 1 percent level using χ^2 test.
Standard errors in parentheses are adjusted for clustering of observations within hosts over time.
Table reports Arellano-Bond (1991) dynamic panel data estimates of Equation (3) using host-year-level data.
Column (4) includes estimates where the sample is restricted to the 1999–2004 period.
The baseline model used for estimation is:

$$TheoreticalWin_{ijpt} = \beta_1 TheoreticalWin_{ijpt-1} + \beta_2 Comps_{ijpt-1} + \beta_3 Comps_{ijpt-1} \times Experience_{jt} + \beta_4 Experience_{jt} + \sum_{j=2}^{6} \gamma^j Property_p^j + \sum_{k=1994}^{2003} \lambda^k Year_t^k + \mu_j + \varepsilon_{ijpt}$$

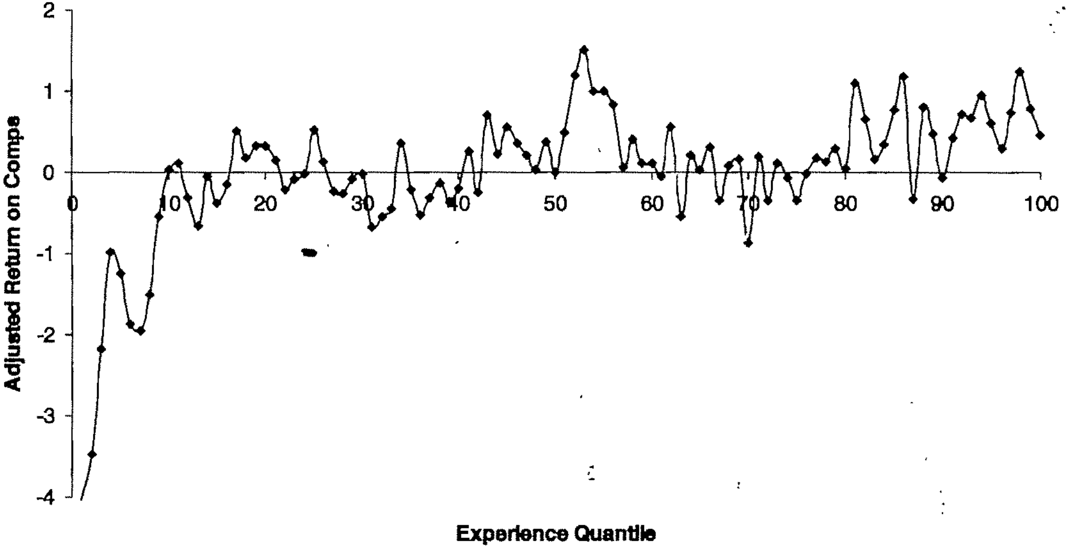
Variable Definitions:
TheoreticalWin = aggregate theoretical win across all customers managed by a host during the year;
Comps = aggregate comps awarded by host to all customers managed by that host during the year;
TightMonitoring = 1 if host is employed at properties 1, 2, or 3, and 0 otherwise; and
Experience = number of years of host experience at property as of the start of the year.

estimate demonstrates that each $1 in comps invested in a host's portfolio of customers for the year yields $1.38 of theoretical win in the next year.

The results in Column (2) of Table 5 provide support for H3 and point to evidence of learning. The coefficient on *Comps* × *Experience* is positive and significant (coefficient = 0.043; $p < 0.05$), consistent with the notion that hosts gain ability in acquiring and incorporating local information into their decisions as they gain experience. The coefficient estimate on *Comps* × *Experience* documents that the "return" on each $1 in comps invested in a host's portfolio of customers increases by $0.043 per year of host experience on average.

Column (3) contains results from estimating a version of Equation (3) that allows the learning effect to vary for properties with tight versus loose monitoring through the addition of the term *Comps* × *Experience* × *TightMonitoring*. The coefficient estimate on *Comps* × *Experience* in the specification in this column (coefficient = 0.089; $p < 0.05$) captures the learning effect for loose monitoring properties. This estimate shows that the "return" on each $1 in comps invested in a host's portfolio of customers increases by $0.089 per year of host experience in loose monitoring properties. The coefficient estimate on *Comps* × *Experience* × *TightMonitoring* (coefficient = −0.083; $p < 0.05$) captures the differential learning effect for tight monitoring properties. This

FIGURE 1
Adjusted "Return on Comps" across Experience Quantiles[a]



[a] Experience quantiles based on experience are measured as cumulative number of trips assigned to a host; adjusted return on comps measured as $ROC_{itj} - \overline{ROC_{yj}}$. where ROC_{itj} denotes return on comps for customer i on trip t at property j and $\overline{ROC_{yj}}$. denotes the mean for ROC across all customer-host trips in year y at property j.

estimate suggests that any learning effects are essentially negated for properties with tight monitoring, providing strong support for rejecting the null form of H4 in favor of the "experimentation" hypothesis.[9] Column (4) repeats this analysis restricting the sample period to 1999–2004 when all properties were operating and shows that the results are not sensitive to the inclusion of earlier time periods for some properties.

Before turning to estimation of Equation (3) using the customer-level observations, we first document a simple pattern in the data that is suggestive of learning in the decentralized information-processing activities of hosts at this level. Figure 1 illustrates how a measure of the relationship between future customer performance and current comp decisions varies with the general experience level of casino hosts. We measure the "return on comps" (*ROC*) for each customer-host-property-year observation as the total theoretical win for the customer at the property over the subsequent year divided by the dollar value of comps awarded to the customer by a host in the current year. To control for heterogeneity across properties and years, we then adjust this measure by subtracting its property-year-level mean from each observation. We form experience portfolios by splitting the sample into 100 quantiles based on *ExpGeneral* and then taking the mean level of the adjusted return-on-comps measure for each portfolio. Figure 1 provides evidence consistent with learning—the ratio of future performance to the current dollar value of comps increases as hosts gain general experience interacting with customers. Hosts in the lowest experience quantiles

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[9] The finding of limited learning in tight monitoring properties applies only to learning in the decentralized use of decision-rights by hosts, which is the focus of this study. The positive coefficients on *Experience* in Table 5 are consistent with hosts, on average, learning by experience generally. In untabulated results, we did not find any significant differences in the coefficient on *Experience* between tight and loose monitoring properties consistent with more general learning by experience in both types of properties.

TABLE 6

General and Specific Learning for Properties with Tight versus Loose Monitoring

	TheoreticalWin$_{t+1}$		
	(1)	(2)	(3)
TheoreticalWin$_t$	0.460***	0.458***	
	(0.0060)	(0.0060)	
Comps$_t$	0.254***	0.240***	1.223***
	(0.0200)	(0.0210)	(0.0200)
Comps$_t$ × *ExpGeneral*	0.0004***	0.0006***	0.002***
	(0.0001)	(0.0002)	(0.0002)
Comps$_t$ × *ExpSpecific*	−0.003***	−0.003***	−0.007***
	(0.0010)	(0.0010)	(0.0010)
Comps$_t$ × *ExpGeneral* × *TightMonitoring*		−0.001***	−0.003***
		(0.0003)	(0.0003)
Comps$_t$ × *ExpSpecific* × *TightMonitoring*		0.0001	0.003**
		(0.0010)	(0.0010)
ExpGeneral	4.757***	4.857***	7.132***
	(0.2810)	(0.2840)	(0.3390)
ExpSpecific	27.910***	27.698***	51.718***
	(1.5980)	(1.6000)	(2.2840)
Host Fixed Effects	+++	+++	+++
Site Fixed Effects	+++	+++	+++
Year Fixed Effects	+++	+++	+++
Observations	229,861	229,861	229,861
R^2	0.34	0.34	0.25

, * Denotes significance at the 5 percent and 1 percent levels, respectively.
+++ Denotes jointly significant at the 1 percent level using χ^2 test.
Standard errors in parentheses are adjusted for clustering of observations within customers over time.
Table reports OLS estimates of Equation (4) using customer-host-year level data.
The baseline model tested is:

$$TheoreticalWin_{ijpt} = \beta_1 TheoreticalWin_{ijpt-1} + \beta_2 Comps_{ijpt-1} + \beta_3 Comps_{ijpt-1} \times ExpGeneral_{jt} + \beta_4 Comps_{ijpt-1} \times ExpSpecific_{ijt} + \beta_5 ExpGeneral_{jt} + \beta_6 ExpSpecific_{ijt} + \sum_{j=2}^{6} \gamma^j Property_p^j + \sum_{k=1994}^{2003} \lambda^k Year_t^k + \mu_j + \varepsilon_{ijpt}$$

Variable Definitions:
TheoreticalWin = customer's total theoretical win during the year;
Comps = total comps awarded by the host to the customer during the year;
ExpGeneral = cumulative number of trips managed by the host up to the start of the year;
ExpSpecific = cumulative number of trips for a specific customer managed by the host up to the start of the year; and
TightMonitoring = 1 if host is employed at properties 1, 2, or 3, and 0 otherwise.

perform significantly worse than the average for each property-year and their performance does not tend to meet or exceed property-year average performance until their experience levels are in the 10th quantile and beyond.

Table 6 contains results from estimating Equation (3) using the customer-host-property-year level data. The results in Column (1) provide evidence that skill in acquiring and incorporating local information into comp decisions at least partially arises via learning through general experience in interacting with customers. The interaction between *Comps* and *ExpGeneral* is positive and significant at $p < 0.01$, again providing support for H3. Consistent with the results of the host-portfolio-level analyses reported in Table 5, the results in Column (2) of Table 6 also provide support for the "experimentation" hypothesis (H4), showing that learning effects from general experience are weaker for properties with tight monitoring. The coefficient on *Comps* × *ExpGeneral* × *TightMonitoring* is negative and significant ($p < 0.01$).

The results in Table 6 are not consistent with learning occurring via experience interacting with specific customers (*ExpSpecific*). Surprisingly, the coefficient on the interaction between *ExpSpecific* and *Comps* is negative and significant at the $p < 0.01$ level. On average, it appears that the quality of discretionary decisions declines as hosts gain experience with individual customers. There are at least two potential explanations for this result. First, customers may themselves be learning from repeated interaction about the organization's comp policies. If this were the case, then customers would become more demanding of comp awards as they gain experience with a property or a specific host. In this scenario, we would expect the problem to be attenuated in properties with tight monitoring, where employees are less likely to deviate from decision guidelines, and exacerbated in properties with loose monitoring, where employees are more likely to do so. The results in Table 6 provide mixed evidence of such a pattern. The coefficient on *Comps* × *ExpSpecific* × *TightMonitoring* is positive in all specifications, but is significant only in Column (3), which excludes lagged theoretical win.[10]

The second potential explanation for this result is that it reflects the attempts of hosts to dynamically manage the cumulative comp percentage awarded to a customer over time. If hosts overcomp a customer on one trip, they may try to recoup the "investment" by limiting comps on future trips. Similarly, in managing the expectations of repeat customers, hosts may attempt to generally limit comps over time. Figure 2 provides evidence that this is the case. This figure plots the cumulative comp percentage awarded by a host to a customer against the relationship-specific experience decile of the host. The cumulative comp percentage is defined for each customer-host-trip as the dollar value of all comps awarded to a customer by a host during all past trips divided by the total theoretical win for that customer over all past trips with the host. Experience deciles are formed by splitting the sample based on *ExpSpecific* and then taking the mean level of the cumulative comp percentage for each decile. Figure 2 demonstrates that comp percentages tend to be significantly higher during the customer's first trip with the host, but cumulatively, they gradually converge to the 40 percent guideline specified in hosts' formal decision-rights. The pattern that emerges in Figure 2 is one in which hosts dynamically manage the total comps awarded to individual customers toward the decision guidelines prescribed by the firm.

Our various empirical tests rely on data aggregated at different levels of analysis and many employ interaction terms, which can be highly collinear with the underlying interacted variables. Table 7 provides information on pair-wise correlations among the variables used in each of our regression-based empirical tests. As expected, some of the correlations among interacted variables are relatively high but not so high as to cause a problem in our analyses, given our large sample sizes. In particular, our results are robust across a variety of specifications and do not, as a result, seem to show any of the typical signs of multicollinearity.[11]

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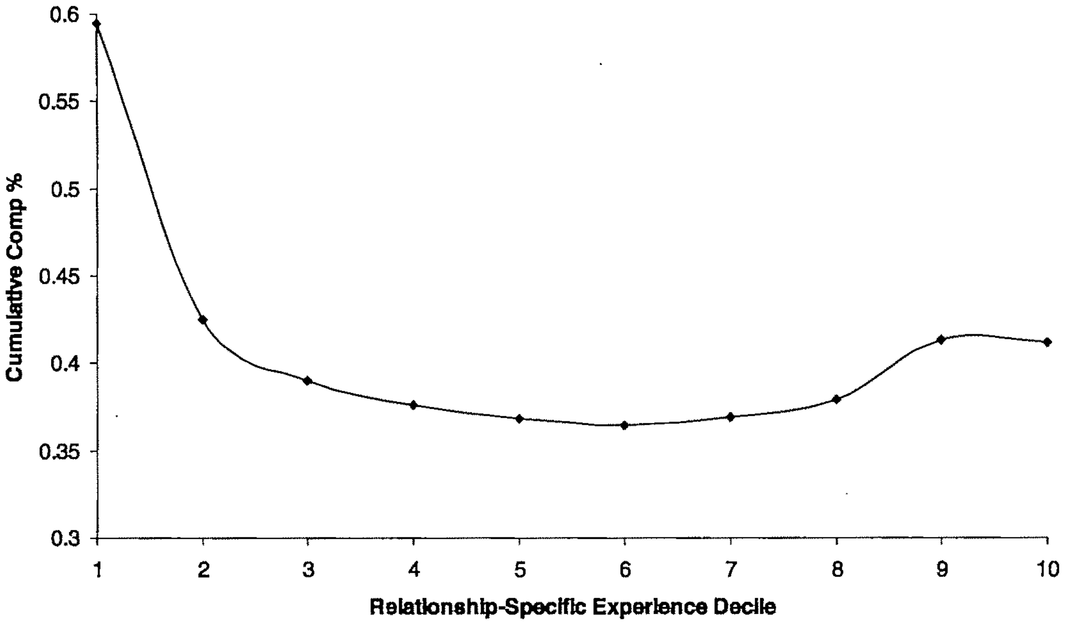
[10] The specification in Column (3) excludes lagged theoretical win. We include this column to check whether the relatively low coefficients on *Comps* reported in Columns (1) and (2) are an artifact of aggregating the data at the customer-year level. If comps awarded during the current year are associated with an increase in theoretical win that arises later in the same year (e.g., from repeat trips within the year), then this effect would be obscured by the inclusion of lagged theoretical win. The results suggest that this is the case as the coefficient rises to approximately $1.22 in the absence of lagged theoretical win as an additional explanatory variable.

[11] It is worth noting that some of our estimates are based on the panel data models of Arellano and Bond (1991) in which variables are first-differenced prior to estimation to account for host fixed effects (reported in Table 5). Correlations among the first-differenced variables are generally lower than correlations among the levels of these variables as reported in Table 7.

FIGURE 2
Cumulative Comp Percentage across Relationship-Specific Experience Deciles[a]



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[a] Relationship-specific experience deciles based on experience are measured as cumulative number of trips with a specific customer assigned to a host; cumulative comp percentage is defined as the total dollar value of comps awarded to a customer by a host over all past trips with the customer divided by the theoretical win of that customer over all past interactions with the host.

V. CONCLUSION

We view this study as among the first attempts to document the relationship between learning and management control through monitoring. We find strong learning effects in our setting, which are concentrated among employees in business units that are "loosely monitored" and almost entirely absent in those which are "tightly monitored." We also show a mechanism by which these learning effects occur. Employees in "tightly monitored" business units face implicit incentives to experiment less in their decisions, leaving them fewer opportunities to learn.

We acknowledge that our proxy for classifying business units in terms of "tight" versus "loose" monitoring is based on a limited amount of data. We attempt to combine both qualitative and quantitative data to validate our classification of business units. However, the challenge remains to develop stronger proxies to capture variation in both the intensity *and* form of monitoring. Potentially interesting sources of variation to explore might be *what* gets monitored (actions versus outcomes), *when* monitoring takes place (pre- versus post-decision), and *who* does the monitoring (direct supervisor versus controller). Our results also speak to a trade-off between control and learning inherent in tight monitoring, but our study does not address how this trade-off is related to overall performance. Future research can make a contribution by identifying the long-term risk and performance implications of different monitoring choices.

TABLE 7

Correlations among Variables Used In Empirical Tests

Panel A: Correlations at the Host-Annual Level (Corresponding to Analysis in Table 2)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) *Exit*	1							
(2) *CustomerGrowth*	−0.0274	1						
(3) *TripsPerCustomerGrowth*	0.0454*	0.0364	1					
(4) *TheoreticalWinPerTripGrowth*	−0.0048	0.0065	0.1103*	1				
(5) *Discretion%*	−0.0757*	−0.0982*	−0.0214	−0.033	1			
(6) *Overcomped*	−0.0118	−0.0812*	−0.0109	−0.0223	0.5366*	1		
(7) *ExcessComps*	0.0287	−0.0193	−0.0179	−0.0067	0.3090*	0.4202*	1	
(8) *ExcessComps* × *TightMonitoring*	0.0301	0.0034	−0.0023	−0.0004	0.2115*	0.2573*	0.6910*	1
(9) *Experience*	−0.0927*	−0.1244*	−0.2072*	−0.013	0.1739*	0.0598*	0.0402*	0.0201

Panel B: Correlations at the Host-Customer-Trip Level (Corresponding to Analysis in Table 4)

(1)	*TheoreticalWin*	1			
(2)	*Comps*	0.6325*	1		
(3)	*Comps* × *Experience*	0.3246*	0.5082*	1	
(4)	*Comps* × *Experience* × *TightMonitoring*	0.3457*	0.5468*	0.7002*	1
(5)	*Experience*	−0.0029	0.0002	0.3439*	0.2196*

Panel C: Correlations at the Host-Annual Level (Corresponding to Analysis in Table 5)

(1)	*Comps*	1					
(2)	*TheoreticalWin*	0.5927*	1				
(3)	*TheoreticalWin* × *TightMonitoring*	0.3676*	0.6973*	1			
(4)	*Overcomped*	0.0582*	−0.0091*	−0.0847*	1		
(5)	*Overcomped* × *TightMonitoring*	0.0111*	0.0016	0.0384*	0.5360*	1	
(6)	*ExcessComps*	0.0186*	−0.0154*	−0.0500*	0.5777*	0.3137*	1
(7)	*ExcessComps* × *TightMonitoring*	0.0016	−0.0014	0.0164*	0.2612*	0.4873*	0.6611*

Panel D: Correlations at the Host-Customer-Annual Level (Corresponding to Analysis In Table 6)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) *TheoreticalWin*$_{t+1}$	1							
(2) *TheoreticalWin*$_t$	0.5512*	1						
(3) *Comps*$_t$	0.4027*	0.6153*	1					
(4) *Comps*$_t$ × *ExpGeneral*	0.2013*	0.0552*	−0.1455*	1				
(5) *Comps*$_t$ × *ExpGeneral* × *TightMonitoring*	−0.0340*	−0.2254*	−0.3589*	0.3414*	1			
(6) *Comps*$_t$ × *ExpSpecific*	0.3559*	0.3429*	0.5693*	0.0586*	−0.0130*	1		
(7) *Comps*$_t$ × *ExpSpecific* × *TightMonitoring*	0.1328*	0.0975*	0.1477*	−0.0140*	−0.0544*	0.2333*	1	
(8) *ExpGeneral*	−0.0971*	−0.0673*	−0.1482*	−0.0369*	0.0072*	−0.0586*	−0.0199*	1
(9) *ExpSpecific*	0.4474*	0.3827*	0.3878*	−0.0527*	−0.0244*	0.5169*	0.0535*	0.1399*

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* Denotes significance at least at the 10 percent level.

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An Analysis of Managerial Use and Market Consequences of Earnings Management and Expectation Management

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ABSTRACT: This study examines how managers coordinate the joint use of earnings management and expectation management by estimating the relationship between these instruments and how this relationship changes as their respective constraints change. We do this by estimating structural models of the two instruments that account for the constraints on their use as well as their effects on each other. Our results suggest that managers use earnings management and expectation management complementarily when managers' ability to use earnings management is less restricted. However, as the constraints on earnings management increase, managers substitute earnings management with expectation management. Moreover, we find that the extent of expectation management influences the extent of earnings management, but not *vice versa*. Examining the market consequences of the use of these instruments, we find that, while there are penalties for using both earnings management and expectation management, either as complements or as substitutes, the net stock price benefit from meeting or beating earnings targets exceeds these penalties.

Keywords: *earnings management; expectation management; market response; benchmark beating.*

JEL Classifications: *G14; M41.*

Data Availability: *Data are available from public sources identified in the study.*

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I. INTRODUCTION

Managers and investors attach significant importance to firms achieving quarterly and annual earnings benchmarks (Levitt 1998; Bartov et al. 2002; Lopez and Rees 2002; Skinner and Sloan 2002; Brown and Caylor 2005). Graham et al. (2005) find that 80.7 percent of the CFOs they interviewed guide analysts to some degree and that managers take a mix of accounting and economic actions to ensure that earnings benchmarks are met. Consistent with these observations, prior research has examined upward earnings management and downward guidance of analysts' earnings expectations as two key instruments typically used by managers to increase the likelihood of achieving earnings targets. However, few studies explicitly test the direct relationship between earnings management and expectation management. Moreover, prior studies examining the stock price implications of using these two instruments have largely focused on their use independent of each other, shedding little insight on how their *joint* use would affect stock prices. Hence, this study examines these two issues in order to provide a better understanding of how managers determine the extent to which each of these instruments is used and their associated stock price consequences.

The existing literature generally assumes that *both* earnings management and expectation management are used by managers to enhance the likelihood of firms meeting or beating earnings targets (Matsumoto 2002; Burgstahler and Eames 2006), implicitly suggesting a complementary relationship between the two instruments. More recently, Brown and Pinello (2007) document evidence suggesting a substitutive relationship—the annual audit requirement in the fourth quarter constrains managers' use of income-increasing discretionary accruals, while increasing their reliance on downward guidance of analysts' forecasts. Their finding raises questions about whether other constraints on earnings management also affect the relationship between the two instruments and whether constraints on expectation management affect the use of earnings management. Moreover, this reasoning raises the more general question of whether and under what circumstances these two instruments are used as complements or as substitutes.

We address these questions by explicitly modeling the relationship between earnings management and expectation management as a function of their respective costs and each other. That each will be influenced by their respective costs is economically intuitive. That the use of earnings management and expectation management can affect each other follows from the fact that both are often deployed either independently or jointly with the same primary objective of maximizing the likelihood of meeting/exceeding earnings targets or minimizing the penalties of failing to do so.

We begin by developing and validating cost measures for earnings management and expectation management. Consistent with prior studies, we use income-increasing discretionary accruals to measure earnings management (e.g., Jones 1991; Dechow et al. 1995) and the downward revision in analysts' forecasts to measure expectation management (Bartov et al. 2002; Brown and Pinello 2007).[1] Following Brown and Pinello (2007), we use the fourth quarter as a proxy for intertemporal constraints on earnings management. To measure cross-sectional constraints on earnings management, we use net operating assets (*NOA*) because managers' ability to use income-increasing accruals in the future is limited by current period *NOA* and thus reflects a cost of using income-increasing accruals (Barton and Simko 2002; Hirshleifer et al. 2004; Cheng and Warfield 2005; Baber et al. 2011). Absent established measures that reflect constraints on expectation management, we develop an empirical proxy based on the stock price sensitivity to earnings news. Specifically, we propose the sensitivity of stock price to earnings announcements in prior quarters (*SENS*) as an empirical measure of the constraint because this sensitivity is likely to influence the extent of managerial guidance of analyst expectations. In addition, we use the passage of Regulation Fair Disclosure (*RegFD*) as a second constraint on expectation management because, by preventing selective guidance, *RegFD* is likely to have increased the cost of downward guidance.

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[1] Extant literature also suggests that managers may use "real activities" with cash-flow consequences as part of earnings management (Roychowdhury 2006). We focus only on accrual-based earnings management for three reasons. First, given our research design, it is difficult to examine and interpret three-way interactions between accrual-based and real activity-based earnings management and expectation management. Second, most extant measures of "real management" (Roychowdhury 2006; Cohen and Zarowin 2010; Gunny 2010) use annual data and such data items are sparsely available on a quarterly basis, making it difficult to use in our research design. Third, and most importantly, extant models of estimating real management yield results that are highly correlated with empirical estimates of discretionary accruals. Research design to examine accrual and real management jointly in the presence of such a correlation is an econometrically challenging task.

As expected, we find that earnings management and expectation management are negatively related to their respective constraints, thus validating our empirical proxies.[2] In addition, both constraints on earnings management (*NOA* and fourth quarter) are positively associated with expectation management, whereas constraints on expectation management (*SENS* and *RegFD*) do not affect earnings management.

Having established the role of the respective constraints on each of the two instruments, we next examine the direct relationship between them using OLS, by first assuming that earnings management is more likely to be influenced by expectation management than *vice versa*.[3] We later relax this assumption. Based on the result that earnings management constraints affect both earnings and expectation management, we allow the relationship between earnings management and expectation management to vary with the extent to which earnings management is constrained. Both univariate and OLS results suggest that the relationship between earnings management and expectation management is conditional on the extent of earnings management constraints. We find that earnings management is positively associated with expectation management when constraints on earnings management are low, i.e., in interim quarters or when *NOA* is low. When the constraints are high, i.e., in the fourth quarter or when *NOA* is high, the two instruments are negatively associated with each other. However, we do not observe such a negative association during the fourth quarter when *NOA* is sufficiently low.

Next, we consider the possibility that managers jointly determine the extent of earnings management and expectation management. Because expectation management is a choice variable, as is earnings management, there is still the potential for endogeneity even after accounting for the effect of earnings management constraints on expectation management. Therefore, we re-estimate the relationship between earnings management and expectation management using a system of simultaneous Equations (2SLS). The 2SLS results are similar to those of univariate tests and OLS. For example, we find that the relationship between earnings management and expectation management is positive when earnings management constraints are less binding (low *NOA* or interim quarters) and negative when the constraints are more binding (high *NOA* or the fourth quarter). This result, together with the results of univariate tests and the OLS estimation, suggests that, in a setting in which the manager anticipates that earnings are unlikely to meet expectations, the manager increases the use of both instruments, the relative increases being determined by balancing out their respective costs. However, when earnings management is highly constrained, such that income-increasing accruals are ruled out, the manager's choice is restricted to managing expectations and, hence, guidance would need to be more steeply downward, leading to a negative association.

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[2] Specifically, we find that income-increasing discretionary accruals are lower when *NOA* is higher (e.g., Barton and Simko 2002) and lower in the fourth quarter than in interim quarters (Brown and Pinello 2007). With respect to expectation management, we find that the extent of downward expectation management is significantly smaller when the sensitivity of price to earnings news is greater and after the passage of *RegFD*.

[3] This assumption is guided by the typical way in which the timeline of earnings events unfolds over a fiscal quarter.

The 2SLS estimation shows further that, while the constraints of earnings management are positively associated with expectation management, the extent of earnings management itself is not influenced by the extent of expectation management. This result is potentially due to some managers adjusting the amount of earnings management after their initial determination of the amount of earnings management and expectation management.

Examining whether market participants' response to earnings announcements reflects managers' use of these two instruments, we find that investors impose significant penalties on firms for using expectation management. While the discount on the meet/beat premium itself is relatively small (22 percent), as in Bartov et al. (2002), we find that including the stock price decline during the quarter eliminates 61 percent of the meet/beat premium, reflecting economically significant costs associated with expectation management. Similar to expectation management, we find a 12 percent discount on the meet/beat premium associated with the use of earnings management. Overall, even after taking account of the stock price decline during the quarter as well as the discounts on the meet/beat premium for using both earnings management and expectation management, the net stock price benefit remains positive and significant.

Our study contributes to the literature on earnings management and expectation management along the following dimensions. First, unlike prior studies, we examine the relationship between earnings management and expectation management directly by estimating structural models that (1) account for their respective constraints, and (2) allow for the possibility that the use of these instruments is determined jointly. By allowing for the joint determination of the use of these instruments, our research design captures trade-offs facing managers more completely. Specifically, we document how the use of one instrument varies with the constraints on the other instrument, as well as the extent to which the other instrument is used. In examining the trade-offs arising from differential constraints, we also contribute toward recent work on how various factors constrain management's choices among multiple vehicles of earnings management. For example, Fan et al. (2010) document that constraints on accrual management, such as the fourth quarter or higher levels of NOA, increase the likelihood that managers will shift core expenses to special items to inflate core earnings (classification shifting). In a similar spirit, Badertscher (2011) documents how managers trade off the use of accrual management in favor of real activities management or non-GAAP earnings management as the degree and the duration of overvaluation increase.

Second, in addition to Brown and Pinello's (2007) intertemporal constraint (fourth quarter), we incorporate a cross-sectional constraint on earnings management, net operating assets (*NOA*). In contrast to Brown and Pinello's (2007) unconditional analysis, our use of NOA allows for a conditional analysis that can exploit how the relationship between the two instruments changes both within and across quarters as the associated costs change. We find that the association between expectation management and earnings management is conditional on the constraints on earnings management: when the constraints on earnings management are maximal (minimal), the extent of expectation management has a negative (positive) impact on the extent of earnings management. Thus, substitution effects are not limited to the fourth quarter as in Brown and Pinello (2007), but also apply to settings when *NOA* is sufficiently high.

Third, we model constraints associated with expectation management and introduce price sensitivity to earnings information (*SENS*) as a new empirical proxy to measure the cost of using this instrument. The notion that there is a cost associated with expectation management and the identification of an empirical proxy has not been explicitly introduced in the literature.[4] Overall, our analysis contributes to the earnings management and expectation management literature by documenting the influence of associated constraints on how managers choose and trade off the use of the two instruments.

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[4] We caution the reader that our empirical measure of the cost of expectations management, *SENS*, is a noisy proxy and, hence, we conduct some sensitivity tests using alternative measures. This is discussed in greater detail in the "Results" section as well as in the "Robustness Tests" section.

Finally, we contribute to the literature on meeting/beating of earnings targets and extend Bartov et al. (2002) by examining discounts on the meet/beat premium for the joint use of these instruments and, more importantly, by examining the penalties for using earnings management and expectation management that are incremental to the discounts on the meet/beat premium. We find a *net* positive effect on stock prices from the use of these instruments, whether they are used independently or jointly, thereby providing an explanation for managers' continued use of these instruments.

In Section II, we review the related literature. Section III describes the data and sample selection. Section IV outlines the research design and discusses associated tests of the relation between earnings and expectation management. Section V discusses our tests of the stock market reaction to the use of these instruments. Section VI discusses the robustness of the results, and Section VII concludes.

II. RELATED LITERATURE

Our study builds upon two streams of literature—one that examines managerial use of earnings and expectations management and the other that focuses on market responses to the use of these instruments.

Relationship between Earnings Management and Expectation Management

The existing literature on expectation management (e.g., Soffer et al. 2000; Bartov et al. 2002; Kasznik and McNichols 2002; Skinner and Sloan 2002; Cotter et al. 2006) and earnings management (e.g., Dechow et al. 1995; Degeorge et al. 1999; Payne and Robb 2000; Burgstahler and Eames 2006) suggests that managers primarily use these two instruments to meet or beat analysts' earnings expectations.[5] However, most empirical examinations of these two instruments generally focus on one of the instruments without considering when and how managers choose between them and/or in combination.

Matsumoto (2002) and Burgstahler and Eames (2006) are among the few exceptions that implicitly suggest that managers rely on *both* earnings management and expectation management to achieve earnings targets. Matsumoto (2002) finds that both earnings management and expectation management are used to avoid negative earnings surprises. Similarly, Burgstahler and Eames (2006) document that managers rely on both upward management of reported earnings and downward management of analysts' forecasts to achieve non-negative earnings surprises. While these studies imply joint use of the two instruments, suggesting a complementary relationship, there is no explicit examination of whether and how managers use earnings management and expectation management in combination.

In a more recent study, Brown and Pinello (2007) examine how a constraint on earnings management affects managerial use of both earnings management and expectation management. Specifically, they argue that the cost of earnings management is higher in the fourth quarter than in interim quarters because of the audit requirement associated with annual reporting. This increased constraint on earnings management makes expectation management relatively less costly in the fourth quarter. Supporting their argument, the authors find that firms rely more on expectation management (as measured by the extent of downward revision of analyst forecasts) and less on income-increasing accrual management in the fourth quarter than in interim quarters.

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[5] Managers may use expectation management or earnings management for other reasons, such as to mitigate litigation risk (Kasznik 1999), to maximize private benefits (Healy 1985; Bergstresser and Philippon 2006), or to prevent debt covenants from being triggered (Beatty and Weber 2003). This study focuses on the meeting or beating of analyst forecasts and does not consider these other alternatives.

By documenting the intertemporal variation in earnings management and expectation management, Brown and Pinello (2007) show that the two instruments are more closely related than reflected in previous studies. However, because of their focus on the fourth quarter, Brown and Pinello (2007) do not examine the relationship between earnings management and expectation management more generally. Moreover, their evidence of a substitutive relationship between the two instruments contrasts with prior evidence of a complementary relationship implicit in Matsumoto (2002) and Burgstahler and Eames (2006).

Overall, the evidence to date on the relationship between earnings management and expectation management remains inconclusive. Hence, we address this gap in the literature by modeling earnings management and expectation management as a function of their respective costs and each other.

Market Response to Earnings Management and Expectation Management

In an efficient market, it is not only *whether* firms meet analysts' expectations that should matter, but also *how* they do it. Hence, extant literature has also examined the stock market response to managers' use of earnings management and expectation management.[6] Prior research has documented that investors recognize when earnings may have been enhanced via income-increasing discretionary accruals, discounting premiums paid for meeting or exceeding earnings benchmarks accordingly (e.g., DeFond and Park 2001; Balsam et al. 2002; Baber et al. 2006). Similarly, Bartov et al. (2002) report a partial discounting of the meet/beat premium for firms that likely engage in expectation management. However, insofar as Bartov et al. (2002) focus on the meet/beat premium, they do not examine the total costs associated with the independent or joint use of these instruments.

The claim that managers use both earnings management and expectation management to meet earnings targets assumes that it is cost-beneficial for managers to use these instruments.[7] However, the existing literature is silent on whether the stock price benefits of using expectation management and earnings management outweigh their associated penalties. Hence, we focus on estimating the *total* stock price consequence of using the two instruments by estimating *both* the discount on the meet/beat premium and the additional negative price consequences of the use of the two instruments. Our analysis also examines the stock price consequences for firms that use these instruments and yet fail to meet earnings targets.

III. DATA, MEASUREMENT OF VARIABLES, AND DESCRIPTIVE STATISTICS

Sample Selection and Description of Data

We use data on publicly traded U.S. firms for calendar years 1993 through 2005. We begin with consensus analyst forecasts of quarterly earnings per share (EPS) from I/B/E/S. Similar to Bartov et al. (2002), we eliminate forecasts issued before the prior quarter's earnings release or issued after the current quarter's earnings release. Further, to be included in the sample, the earnings release for the quarter must be no later than 90 days after the corresponding quarter-end. This initial sample is then merged with Quarterly Compustat and CRSP to obtain accounting and stock return data. These restrictions yield 190,710 firm-quarter observations.

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[6] There are other consequences of such managerial actions, such as firms' investment decisions (Cohen and Zarowin 2010).

[7] Our analysis focuses on stock price effects only and does not constitute a more general cost-benefit analysis of using the two instruments. Moreover, to the extent that some managers try to meet earning targets to maximize unobservable private benefits, the link between the stock price response and the use of these instruments is likely to be inconclusive.

We eliminate firm-quarters that have insufficient data for the estimation of discretionary accruals or net operating assets, which further reduces the sample to 95,692 observations. We also eliminate observations for firms that do not have at least four (two) prior consecutive firm-quarters of data required to measure the persistence of earnings performance (sensitivity of stock price to earnings surprises). In addition, we eliminate observations for which there are less than ten firm-quarters for a two-digit SIC code within a Compustat fiscal year, required for the estimation of discretionary accruals. These additional restrictions yield a final sample of 48,417 firm-quarters for 4,454 unique firms. To mitigate the undue influence of outliers, we examine distributions of key variables and winsorize them at the 1st and 99th percentiles.

Measurement of Variables

Earnings Management and Expectation Management

Following the literature, we use discretionary accruals as a measure of earnings management. We measure discretionary accruals for quarter q as the residuals from the Modified Jones (1991) Model as used in Kothari et al. (2005). We estimate the model using a minimum of ten observations by two-digit SIC code and fiscal year.[8] Because the extent to which analysts' forecasts have been influenced by managers' efforts to "walk down" expectations cannot be directly observed, we rely on proxies that indirectly capture expectation management. Following Bartov et al. (2002) and Brown and Pinello (2007), we measure the magnitude of expectation management as the first consensus analyst forecast minus the last consensus analyst forecast of EPS. Similar to Bartov et al. (2002), we require that the first consensus forecast be issued at least one day after the prior quarter's earnings release, and the last consensus forecast be issued at least one day before the current quarter's earnings release. For expositional convenience, we use discretionary accruals multiplied by 100 (*DA*) in our analysis, and similarly for expectation management (*Guidance*). We also use an indicator variable for downward expectation management (*GDOWN*), coded as 1 if *Guidance* > 0, and 0 otherwise.[9]

Constraints on Earnings Management and Expectation Management

Following Brown and Pinello (2007), we use the fourth quarter as one of the constraints on earnings management because the annual audit requirement constrains managers' use of discretionary accruals. In addition, we use lagged net operating assets (*NOA*) as a cross-sectional constraint. Because of GAAP restrictions, current period *NOA* limits managers' ability to use income-increasing accruals in the future (Barton and Simko 2002; Baber et al. 2011). Following Hirshleifer et al. (2004), we measure *NOA* as (operating assets – operating liabilities)/lagged total assets. In nonparametric specifications, we use indicator variables that indicate the lowest/highest quartile of within-sample *NOA*.

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[8] Kothari et al. (2005) suggest performance matching as a superior method of controlling for the effect of return on assets (*ROA*) on accruals. Unlike Kothari et al. (2005) who use a small subsample of firms, we use the entire cross-section of firms from I/B/E/S, Compustat, and CRSP. This makes it difficult to obtain an out-of-sample set of matched firms. Therefore, we include *ROA* as an explanatory variable in the accrual model to control for the within-sample effect of performance on accruals. Appendix A provides additional details on the estimation of discretionary accruals.

[9] Because this measure also captures news that is not firm-specific, such as industry-wide factors and systematic optimism among analysts, we also use residuals from regressions of *Guidance* and *GDOWN* on these factors as alternative measures of guidance. Results using these alternative measures are discussed in Section V.

Because prior research has not explicitly examined the constraints that managers face in managing analysts' earnings expectations, the literature provides little guidance. Generally, downward revisions in analysts' forecasts are viewed as negative news, and stock prices typically decline (e.g., Pownall et al. 1993; Gleason and Lee 2003). This suggests that the propensity with which stock prices decline in response to any walk-down is a potential cost and, hence, may act as a constraint on the manager's ability to manage analysts' expectations. Although this reasoning suggests that the stock price sensitivity to management forecasts would be an ideal measure, the consequent data attrition prevents us from using this measure.[10] Hence, we propose the sensitivity of stock prices to earnings news as a measure of the constraint on expectations management. Specifically, we define "sensitivity" (*SENS*) as the abnormal return per unit of earnings surprise, measured as the three-day cumulative abnormal return around the earnings announcement in quarter $q-1$ divided by the corresponding surprise in the reported earnings.[11] Greater sensitivity suggests a larger negative price reaction to downward revisions in expected earnings, making downward guidance of analyst forecasts costlier to managers. To allow for time-series variation in the cost of expectation management, we use *Post-2000* as an indicator variable to reflect the cost of expectation management due to the passage of Regulation Fair Disclosure (*RegFD*). We conjecture that, by preventing selective guidance, which in turn limits managers' strategic choices to guide individual estimates downward, *RegFD* is likely to have increased the cost of downward guidance.

Descriptive Statistics

Table 1, Panel A reports the year-wise frequency of firm-quarters. The number of firm-quarters in the sample increases steadily from 2,289 in 1993 to 4,866 in 2005. Table 1, Panel B reports descriptive statistics of the key variables used in the empirical tests. Mean (median) discretionary accruals are −0.03 percent (0.05 percent), comparable to the mean (median) value of −0.03 percent (−0.15 percent) in Kothari et al. (2005). The mean downward guidance of 1.50 is consistent with the downward revision in analysts' forecasts over the fiscal quarter (Kang et al. 1994). The mean (median) of *NOA* is 0.571 (0.618), which is similar to the distribution of *NOA* reported by Hirshleifer et al. (2004). The sensitivity of stock price to earnings surprises (*SENS*) has a mean (median) value of 0.916 (0.397), suggesting an almost one-to-one relationship between the dollar surprise in EPS and the abnormal return. However, there is a significant amount of variation in *SENS*, with the 25th percentile substantially below 1 at 0.132 and the 75th percentile slightly above 1.

IV. RESULTS

Relationship between Earnings (Expectation) Management and Its Constraints

We begin with an examination of the respective constraints on earnings/expectation management. We expect an inverse relationship between each instrument and its constraints. Results in support of this negative relationship would validate the empirical measures we use to proxy for the underlying cost of the instrument and provide new evidence on how constraints on the management of earnings and expectations influence managers' choices of these instruments.

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[10] In Section V, we examine alternative measures of the cost of expectation management using revisions in the consensus analyst forecast. One advantage of our measure of *SENS* as defined above is that it does not depend on analyst coverage quality or the voluntary disclosure policy of firms. Because earnings announcements are available universally, *SENS* works as a general measure that is not affected by the self-selection issues that accompany analyst coverage and voluntary disclosure policy.

[11] If the estimated sensitivity is zero or negative (i.e., a negative abnormal return response to a positive earnings surprise or *vice versa*), we estimate the same ratio in quarter $q-2$. For our sample, estimated *SENS* is positive in at least one of $q-1$ and $q-2$ for all sample observations.

TABLE 1
Sample and Descriptive Statistics

Panel A: Frequency of Observations by Year

Year	Firm Quarters
1993	2,289
1994	2,565
1995	2,933
1996	3,243
1997	3,765
1998	4,124
1999	4,090
2000	3,848
2001	3,785
2002	4,024
2003	4,299
2004	4,586
2005	4,866
Total	48,417

Panel B: Distributions of Key Variables

	Mean	Median	25th	75th
DA	−0.03	0.05	−2.03	2.05
Guidance	1.50	0.00	0.00	0.10
NOA	0.571	0.618	0.419	0.753
SENS	0.916	0.397	0.132	1.052
$\lvert FE \rvert$	0.012	0.002	0.0004	0.006
MKTCAP	2236	361	125	1086
NUMEST	5.44	4.00	2.00	7.00
ROA	−0.002	0.012	−0.002	0.025
Market-to-book	3.749	2.326	1.476	3.863

DA denotes discretionary accruals, which are residuals from a Modified Jones (1991) Model, estimated by two-digit SIC code and year. *Guidance* is the first consensus analyst forecast of EPS in the current quarter issued after the prior quarter's earnings release minus the last consensus analyst forecast issued before the current quarter's earnings release. *Guidance* and *DA* are scaled up by 100 for expositional convenience. *NOA* is net operating assets at the beginning of the quarter. *SENS* is the sensitivity of stock price to the surprise in earnings in the prior quarter. $|FE|$ is the absolute value of the difference between actual earnings and the first consensus analyst forecast issued after the prior quarter's earnings release scaled by the closing price of the prior quarter. *MKTCAP* is market capitalization at the beginning of the quarter ($ millions). *NUMEST* is the number of analyst estimates corresponding to the first consensus analyst forecast. *ROA* is return on assets in the current quarter. *Market-to-book* is the ratio of market value of equity to book value of equity. Variable definitions are in Appendix A.

Univariate Analysis

Table 2, Panel A reports the univariate relationship between earnings management and its constraints. Consistent with prior evidence, the results show that the mean (median) of discretionary accruals decreases monotonically from 0.19 percent (0.26 percent) in the lowest quintile of *NOA* to −0.30 percent (−0.07 percent) in the highest quintile. Similarly, the proportion of firm-quarters with positive discretionary accruals (*POSDA*) decreases monotonically from 53.51 percent in the lowest

TABLE 2

Constraints of Earnings Management and Expectation Management

Panel A: Univariate Analysis of Earnings Management

	DA		*POSDA*
	Mean	**Median**	**Mean**
NOA Quintile			
Lowest	0.19	0.26	53.51%
2nd quintile	0.06	0.06	50.81%
3rd quintile	0.03	0.05	50.73%
4th quintile	−0.12	0.00	50.04%
Highest	−0.30	−0.07	48.77%
H0: lowest − highest = 0	t = 7.37	p < 0.01	t = 6.51
Fiscal Quarters			
Interim Quarters	0.32	0.28	54.04%
Fourth Quarter	−1.00	−0.67	41.46%
H0: Interim − Fourth Quarter = 0	t = 28.74	p < 0.01	t = 24.48

Panel B: Univariate Analysis of Expectation Management

	Guidance		*GDOWN*
	Mean	**Median**	**Mean**
Sensitivity Quintile			
Lowest	2.76	0.00	37.29%
2nd quintile	1.61	0.00	32.54%
3rd quintile	1.15	0.00	28.80%
4th quintile	1.01	0.00	27.09%
Highest	0.91	0.00	23.62%
H0: lowest − highest = 0	t = 18.94	p < 0.01	t = 20.87
Regulation Fair Disclosure			
Pre-2000	1.82	0.00	33.10%
Post-2000	1.05	0.00	25.71%
H0: *Pre-2000* − *Post-2000* = 0	t = 14.12	p < 0.01	t = 17.72

Panel C: Multivariate Analysis of Earnings Management and Expectation Management

	Earnings Management		Expectation Management	
	OLS *DA*	Probit *POSDA*	OLS *Guidance*	Probit *GDOWN*
Intercept	0.438***	0.138***	0.233***	−0.413***
	(3.14)	(3.55)	(9.91)	(−8.41)
NOA	−0.870***	−0.202***	0.360**	0.275***
	(−7.46)	(−6.74)	(2.18)	(7.79)
Q4	−1.300***	−0.313***	0.330***	0.082***
	(−17.68)	(−18.21)	(5.36)	(6.20)
SENS	−0.021	−0.006	−0.183***	−0.066***
	(−1.34)	(−1.29)	(−10.49)	(−11.12)

(continued on next page)

TABLE 2 (continued)

	Earnings Management		**Expectation Management**	
	OLS *DA*	**Probit** *POSDA*	**OLS** *Guidance*	**Probit** *GDOWN*
Post-2000	−0.013	0.004	−0.729***	−0.197***
	(−0.31)	(0.31)	(−9.77)	(−11.51)
HLRISK	−0.254***	−0.079***	0.197**	−0.026
	(−4.87)	(−5.03)	(2.09)	(−1.30)
NUMEST	−0.025***	−0.007***	0.007	0.005**
	(−4.56)	(−3.53)	(0.74)	(2.19)
log(*MKTCAP*)	0.065***	0.018***	0.026	0.036***
	(3.51)	(3.09)	(0.78)	(4.53)
PERSIST	0.407***	0.058***	−1.741***	−0.645***
	(5.75)	(2.71)	(−14.75)	(−24.92)
|*FE*|	−1.324***	−0.308***	13.208***	1.142***
	(−3.66)	(−3.46)	(6.79)	(5.36)
LOSS	−0.028	0.138***	0.263***	0.077***
	(−0.36)	(3.55)	(9.91)	(2.91)
Observations	48417	48417	48417	48417
Adjusted R^2	2.12%		5.40%	
Pseudo R^2		1.12%		3.72%

*, **, *** Indicate significance at the 0.1, 0.05, and 0.01 levels, respectively (two-tailed).

Panels A and B: Discretionary accruals (*DA*) are residuals from a Modified Jones (1991) Model, estimated by two-digit SIC code and year. *POSDA* is an indicator variable that takes a value of 1 if discretionary accruals > 0, and 0 otherwise. *NOA* is net operating assets at the beginning of the quarter. *Guidance* is the first consensus analyst forecast of EPS in the current quarter issued after the prior quarter's earnings release minus the last consensus analyst forecast issued before the current quarter's earnings release. *GDOWN* is an indicator variable that takes a value of 1 if *Guidance* > 0, 0 otherwise. *Guidance* and *DA* are scaled up by 100 for expositional convenience. *SENS* is the sensitivity of stock price to the surprise in earnings. *Pre-2000* indicates the period prior to the passage of Regulation Fair Disclosure (RegFD) and *Post-2000* indicates the post-RegFD period. Median test statistics are based on the Wilcoxon-Mann-Whitney test.

Panel C: Discretionary accruals (*DA*) are residuals from a Modified Jones (1991) Model, estimated by two-digit SIC code and year. *POSDA* is set to 1 if *DA* > 0, 0 otherwise. *Guidance* is the first consensus analyst forecast of EPS in the current quarter issued after the prior quarter's earnings release minus the last consensus analyst forecast of EPS issued before the current quarter's earnings. *GDOWN* is set to 1 if *Guidance* > 0, 0 otherwise. *Guidance* and *DA* are scaled up by 100 for expositional convenience. *NOA* is net operating assets at the beginning of the quarter. *Q4* denotes the fourth fiscal quarter. *SENS* is the sensitivity of stock price to the surprise in earnings in the prior quarter. *HLRISK* denotes industries with high litigation risk. *NUMEST* is the number of analyst estimates. *MKTCAP* is market capitalization at the beginning of the quarter ($ millions). *PERSIST* is the number of firm-quarters out of the last four when reported earnings beat analyst forecasts, divided by 4. |*FE*| is the absolute value of the difference between actual earnings and the first consensus analyst forecast issued after the prior quarter's earnings release scaled by the closing price of the prior quarter. *LOSS* is set to 1 if a firm has negative EPS for the past four quarters consecutively, 0 otherwise. Standard errors used to calculate t-statistics and z-statistics are robust to heteroscedasticity and clustering at the firm level. Variable definitions are in Appendix A.

quintile of *NOA* to 48.77 percent in the highest quintile. Panel A shows a similar pattern when the earnings management constraint is the fourth quarter indicator. Consistent with Brown and Pinello (2007), discretionary accruals in the interim quarters have a mean (median) of 0.32 percent (0.28 percent), as compared to a mean (median) of −1.00 percent (−0.67 percent) in the fourth quarter. The proportion of firms with positive discretionary accruals is significantly larger in interim quarters (54.04 percent) than in the fourth quarter (41.46 percent). These differences are all significant $p < 0.01$.

Table 2, Panel B reports corresponding results for expectation management. Consistent with our expectation of a smaller walk-down for firms with greater stock price sensitivity to earnings news, we find that the walk-down decreases monotonically from a mean of 2.76 in the lowest quintile of *SENS* to a mean of 0.91 in the highest quintile. Similarly, the proportion of firm-quarters with downward guidance decreases from 37.29 percent to 23.62 percent as we move from the lowest to the highest quintile of *SENS*. *RegFD* reveals a similar pattern—for firm-quarters before calendar year 2000, the mean walk-down is 1.82 and the proportion of firm-quarters with downward guidance is 33.10 percent, decreasing to 1.05 and 25.71 percent, respectively, after 2000. This result suggests that the passage of *RegFD* made expectation management more costly.

Multivariate Analysis

We next examine the relationship between the two instruments and their respective constraints in a multivariate setting. Specifically, we estimate the coefficient on *NOA* and *Q4* in the following discretionary accrual (*DA*) model using OLS:

$$DA = b_0 + b_1 NOA + b_2 Q4 + \Sigma Control\ variables + \varepsilon_1. \quad (1)$$

To account for the effect of measurement errors in discretionary accruals, we also estimate the coefficients on *NOA* and *Q4* using the following probit specification:

$$Prob(Disc\text{-}accrual > 0) = c_0 + c_1 NOA + c_2 Q4 + \Sigma Control\ variables + \varepsilon_2. \quad (2)$$

Similarly, for expectation management, we estimate the coefficients on price sensitivity (*SENS*) and *Post-2000* using the following OLS and probit regressions:

$$Guidance = d_0 + d_1 SENS + d_2 Post\text{-}2000 + \Sigma Control\ variables + \varepsilon_3. \quad (3)$$

$$Prob(Guidance > 0) = e_0 + e_1 SENS + e_2 Post\text{-}2000 + \Sigma Control\ variables + \varepsilon_4. \quad (4)$$

We use *SENS* and *Post-2000* as control variables in the *DA* model (Equations (1) and (2)) and *NOA* and *Q4* as control variables in the guidance model (Equations (3) and (4)) to examine whether constraints on one instrument influence the extent to which the other is used. We also include other variables that are likely to influence firms' use of income-increasing discretionary accruals and downward guidance of analyst forecasts. Prior evidence of larger market premiums for consistently meeting/beating earnings benchmarks (e.g., Barth et al. 1999; Bartov et al. 2002) suggests that repeated beaters have greater incentives to use earnings and expectation management. Therefore, we include the fraction of the past four fiscal quarters in which earnings meet or exceed analyst forecasts (*PERSIST*). A larger analyst following can represent greater monitoring of earnings quality and/or higher pressure on managers to meet/beat the earnings targets. Hence, we include the number of analyst estimates (*NUMEST*) in both earnings and expectation management models. We use an indicator variable for litigation risk (*HLRISK*) to represent firms' disincentives to use earnings management when market scrutiny of earnings management activities is high.[12] Matsumoto (2002) suggests that firms have a higher likelihood of using earnings (expectation) management when they incur losses or when there is greater uncertainty in analyst forecasts. Therefore, we include an indicator variable set to 1 if the firm has negative EPS in each of the past four quarters and 0 otherwise (*LOSS*), and uncertainty in analyst forecasts measured as the absolute value of the difference between the first analyst consensus forecast and actual earnings scaled by the closing price of the current quarter ($|FE|$). This latter measure is consistent with Matsumoto (2002) and Brown and Pinello (2007). Finally, we include firm size, measured as lagged market capitalization (*MKTCAP*). Appendix A provides details on the measurement of individual variables.

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[12] We classify firms into the high-risk category if their primary SIC code belongs to one of the following groups: biotechnology (SIC 2833–2836), computers (SIC 3570–3577, 7370–7374), electronics (SIC 3600–3674) and retailing industry (SIC 5200–5961).

Table 2, Panel C reports results from estimating Equations (1)–(4).[13] The variables of interest are *NOA*, *Q4*, *SENS*, and *Post-2000*. Consistent with the univariate results reported in Panel A, discretionary accruals decrease as constraints on earnings management increase. In the OLS model, the coefficient on *NOA* is –0.870 ($p < 0.01$), implying a 0.29 percent change in *DA* for a change in *NOA* from the 75th to the 25th percentile. The coefficient on *Q4* is –1.300 ($p < 0.01$) suggesting that, on average, *DA* in fourth quarters is lower than in interim quarters by 1.30 percent. Probit estimation yields similar results—$p < 0.01$ for both *NOA* and *Q4*. The constraints on expectation management, *SENS* and *Post-2000*, do not have a significant effect on discretionary accruals, suggesting that these constraints do not directly influence earnings management. Correspondingly, Table 2, Panel C also shows that the negative relationship between expectation management and its constraints holds in a multivariate setting. The coefficients on *SENS* and *Post-2000* in the OLS model are –0.183 ($p < 0.01$) and –0.729 ($p < 0.01$), respectively. The coefficient on *SENS* is consistent with an 11 percent reduction in downward guidance for a change in *SENS* from the 25th to the 75th percentile. Probit estimation yields similar results. However, unlike earnings management, for expectation management, the positive and significant coefficients on *NOA* (0.360, $p < 0.05$) and *Q4* (0.330, $p < 0.01$) suggest that managers rely more on *expectation management* as the constraints on *earnings management* increase.

Overall, the results of Table 2 show that the use of both earnings and expectation management decrease as their respective costs increase. The results also suggest that managers determine expectation management based on the costs of both expectation and earnings management. However, they appear to determine the extent of earnings management based on its costs but not the costs of expectation management. In the next section, we directly examine the relationship between earnings management and expectation management. Given that *NOA* and *Q4* are significant determinants of both earnings and expectation management, we use these as conditioning variables when examining the relationship between earnings management and expectation management.

Relationship between Earnings Management and Expectation Management

Univariate Tests

Table 3 reports Pearson correlations between earnings management (*DA*) and expectation management (*GDOWN*), conditional on the constraints on earnings management. Panel A shows a positive and significant (negative and insignificant) correlation between earnings management and expectation management in the lowest (highest) quartile of *NOA*. The difference in correlation between the top and bottom quartiles of *NOA* is significant at $p = 0.01$. Similarly, for interim quarters the correlation is positive and marginally significant ($p = 0.08$), whereas it is negative and significant for the fourth quarter ($p < 0.01$), with the difference in correlation also significant at $p < 0.01$. The positive and negative correlations in the low and high constraint subgroups, respectively, are consistent with the interpretation that managers' use of earnings and expectation management is either complementary or substitutive, depending on the extent to which they can manage earnings upward.

Table 3, Panel B reports correlations for quartiles of firms with the lowest and highest *NOA* further stratified into interim and fourth quarters. In the subgroup with minimal constraints on earnings management, *LOW-NOA* and interim quarters, the correlation between earnings and

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[13] Significance of coefficient estimates in these and all subsequent regressions, unless explicitly stated otherwise, is computed on the basis of standard errors that are robust to heteroscedasticity and clustering at the firm level. Note that coefficient estimates are reported after multiplying the dependent variables by 100 (as described in Section III).

TABLE 3

Correlation between Earnings Management and Expectation Management

Panel A: Conditioned on a Single Earnings Management Constraint

LOW-NOA Quartile	*HIGH-NOA* Quartile	p-value for Difference	Interim Quarters	Fourth Quarter	p-value for Difference
0.021 (p = 0.02) n = 12104	−0.012 (p = 0.20) n = 12104	0.01	0.009 (p = 0.08) n=35758	−0.026 (p < 0.01) n = 12659	<0.01

Panel B: Conditioned on Two Earnings Management Constraints

	Interim Quarters	Fourth Quarter	p-value for Difference
LOW-NOA	0.027 (p = 0.01) n = 8940	0.005 (p = 0.80) n = 3164	0.29
HIGH-NOA	0.013 (p = 0.21) n = 8847	−0.049 (p < 0.01) n = 3257	<0.01
p-value for difference	0.35	0.03	

This table reports Pearson correlations between discretionary accruals (*DA*) and downward guidance of analyst forecasts (*GDOWN*) conditional on the constraints on earnings management. Discretionary accruals are residuals from a Modified Jones (1991) Model, estimated by two-digit SIC code and year. *GDOWN* is an indicator variable that takes a value of 1 if *Guidance* > 0, 0 otherwise. *Guidance* is the first consensus analyst forecast of EPS in the current quarter issued after the prior quarter's earnings release minus the last consensus analyst forecast issued before the current quarter's earnings release. *NOA* is net operating assets at the beginning of the quarter.

Panel A shows the correlation for *LOW-NOA* and *HIGH-NOA* quartiles, and for interim and fourth fiscal quarters.

In Panel B, the level of constraints on earnings management is measured using a 2 × 2 matrix of lagged *NOA*, and fourth quarter. The interim-quarter/*LOW-NOA* cell represents the lowest level of constraints and the fourth quarter/*HIGH-NOA* cell represents the highest level of constraints. p-values for differences in correlation are based on Z-stats calculated as $(\rho'_1 - \rho'_2)/\text{sqrt}[1/(N_1 - 3) + 1/(N_2 - 3)]$ where ρ' is Fisher's Z transformation of $\rho = 0.5\ln[(1 + \rho)/(1 - \rho)]$.

expectation management is positive and significant ($p = 0.01$). In the subgroup within which earnings management is most constrained, *HIGH-NOA* and fourth quarter, the correlation is negative and significant ($p < 0.01$). The difference in correlation between these two groups is significant at $p < 0.01$. In the remaining two subgroups, *LOW-NOA* and fourth quarter and *HIGH-NOA* and interim quarter, the association between earnings and expectation management is statistically insignificant.

OLS Estimation

In examining the relationship between earnings management and expectation management, we assume that, within a fiscal quarter, expectation management precedes earnings management, on average. This assumption is consistent with managers' ability to estimate, early in the quarter, the amount of expectation management required based on the optimism in initial analyst forecasts and the potential for upward earnings management.[14]

We estimate the relationship between earnings management and expectation management by estimating discretionary accruals (*DA*) as a function of its constraints and downward guidance (*GDOWN*). To examine how the constraints on earnings management affect this relationship, we estimate the following regressions, using *GDOWN* and its interaction with each of the earnings management constraints—*Q4* in Equation (5); and *HIGH-NOA* and *LOW-NOA*, indicator variables for the top and bottom quartiles of *NOA*, in Equation (6):

$$\begin{aligned} DA = {} & g_0 + g_1 GDOWN + g_2 GDOWN * Q4 + g_3 Q4 + g_4 NOA \\ & + \Sigma Control\ variables + \varepsilon_5. \end{aligned} \tag{5}$$

$$\begin{aligned} DA = {} & f_0 + f_1 GDOWN + f_2 GDOWN * HIGH\text{-}NOA + f_3 GDOWN * LOW\text{-}NOA \\ & + f_4 Q4 + f_5 NOA + \Sigma Control\ variables + \varepsilon_6. \end{aligned} \tag{6}$$

To examine the *joint* effect of these constraints, we partition the sample into 2 × 2 subgroups (*HIGH-NOA* and interim quarters, *LOW-NOA* and interim quarters, *HIGH-NOA* and fourth quarter, and *LOW-NOA* and fourth quarter) and estimate the relationship between *DA* and *GDOWN* for each of these subgroups separately.

Table 4, Panel A reports results from estimating Equations (5) and (6), and Table 4, Panel B reports the estimates for the four subsamples. The key variables of interest are *GDOWN*, capturing expectation management, and its interaction with the earnings management constraints. The coefficient of 0.165 ($p < 0.01$) on *GDOWN* in Model 1 is consistent with an increase of 0.00165 in discretionary accruals when earnings expectations are guided downward, suggesting that earnings management and expectation management are used as complements during the interim quarters. However, the nature of this relationship changes in the fourth quarter. The coefficient on *GDOWN* * *Q4* is –0.310 ($p < 0.01$), and the sum of the coefficient on *GDOWN* and the coefficient on *GDOWN* * *Q4* is negative and significant at $p < 0.01$, suggesting a substitutive relationship between the two instruments in the fourth quarter. Model 2 shows the corresponding relationships for the *NOA* constraint on earnings management (Equation (6)). Again, the results suggest that the relationship between earnings management and expectation management is conditional on the extent of earnings management constraints. The coefficient on *GDOWN* * *HIGH-NOA* is

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[14] This follows since the constraints on managing earnings upward used in our analysis (lagged *NOA* and the fourth quarter) are both known to managers at the beginning of the quarter. Based on the efficacy of their guidance, managers' can subsequently determine the extent of upward earnings management. In the next subsection we relax this assumption and allow them to be determined simultaneously.

TABLE 4

Relationship between Earnings Management and Expectation Management (OLS)

Panel A: Conditioned on a Single Earnings Management Constraint

	Dependent Variable: Discretionary Accruals (*DA*)	
	Model 1	**Model 2**
Intercept	0.354	−0.093
	(2.72)	(−0.80)
GDOWN	0.165***	0.002
	(3.12)	(0.03)
GDOWN ∗ *Q4*	−0.310***	
	(−2.67)	
GDOWN ∗ *HIGH-NOA*		0.002
		(0.02)
GDOWN ∗ *LOW-NOA*		0.318**
		(2.51)
Q4	−1.204***	−1.300***
	(−14.79)	(−17.70)
NOA	−0.861***	
	(−7.88)	
HIGH-NOA		−0.244***
		(−3.57)
LOW-NOA		0.154**
		(2.16)
NUMEST	−0.025***	−0.025***
	(−4.70)	(−4.65)
HLRISK	−0.260***	−0.217***
	(−4.99)	(−4.29)
log(*MKTCAP*)	0.065***	0.060***
	(3.56)	(3.24)
PERSIST	0.418***	0.440***
	(5.80)	(6.10)
|*FE*|	−1.350***	−1.354***
	(−3.75)	(−3.77)
Observations	48,417	48,417
Adjusted R^2	2.14%	2.04%

Hypothesis Test:
GDOWN + *GDOWN*∗ *Q4* = 0: F = 10.24 ($p < 0.01$).
GDOWN∗ *HIGH-NOA* = *GDOWN*∗ *LOW-NOA*: F = 5.13 ($p = 0.02$).

Panel B: Conditioned on Two Earnings Management Constraints

	Dependent Variable: Discretionary Accruals (*DA*)			
	Interim QTRs		Fourth QTR	
	HIGH-NOA	***LOW-NOA***	***HIGH-NOA***	***LOW-NOA***
Intercept	−0.636***	0.756**	−2.537***	0.137
	(−2.61)	(2.41)	(−5.00)	(0.23)

(continued on next page)

TABLE 4 (continued)

Dependent Variable: Discretionary Accruals (*DA*)

	Interim QTRs		Fourth QTR	
	HIGH-NOA	*LOW-NOA*	*HIGH-NOA*	*LOW-NOA*
GDOWN	0.174*	0.329***	−0.375*	0.112
	(1.90)	(2.71)	(−1.91)	(0.48)
NUMEST	−0.007	−0.034**	0.010	0.003
	(−0.54)	(−2.35)	(0.43)	(0.10)
HLRISK	0.045	−0.320**	−0.485	−0.111
	(0.33)	(−2.35)	(−1.60)	(−0.45)
log(*MKTCAP*)	0.074	0.023	0.248**	−0.143
	(1.62)	(0.37)	(2.53)	(−1.22)
PERSIST	0.498***	−0.243	0.183	0.419
	(3.11)	(−1.25)	(0.58)	(1.19)
|*FE*|	−1.790*	−2.011***	−2.088*	−1.120
	(−1.93)	(−3.44)	(−1.94)	(−0.94)
Observations	8,847	8,941	3,257	3,164
Adjusted R^2	0.32%	0.49%	1.45%	0.20%

Hypothesis Test:

$GDOWN_{Interim\ qtr,\ HIGH\text{-}NOA} = GDOWN_{Interim\ qtr,\ LOW\text{-}NOA}$: $\chi^2 = 1.04$ ($p = 0.31$).
$GDOWN_{Fourth\ qtr,\ HIGH\text{-}NOA} = GDOWN_{Fourth\ qtr,\ LOW\text{-}NOA}$: $\chi^2 = 2.58$ ($p = 0.11$).
$GDOWN_{Interim\ qtr,\ LOW\text{-}NOA} = GDOWN_{Fourth\ qtr,\ HIGH\text{-}NOA}$: $\chi^2 = 9.34$ ($p < 0.01$).
$GDOWN_{Interim\ qtr,\ HIGH\text{-}NOA} = GDOWN_{Fourth\ qtr,\ LOW\text{-}NOA}$: $\chi^2 = 0.06$ ($p = 0.81$).

*, **, *** Indicate significance at the 0.1, 0.05, and 0.01 levels, respectively (two-tailed).

The dependent variable is discretionary accruals (*DA*) measured as residuals from a Modified Jones (1991) Model, estimated by two-digit SIC code and year. *DA* is scaled up by 100 for expositional convenience. *GDOWN* is set to 1 if *Guidance* > 0, 0 otherwise. *Guidance* is the downward revision during the quarter in analyst consensus forecasts of EPS. *NOA* is lagged net operating assets. *LOW-NOA* (*HIGH-NOA*) indicates the bottom (top) quartile of lagged *NOA*. *Q4* indicates the fourth fiscal quarter. *NUMEST* is the number of analyst estimates. *HLRISK* denotes industries with high litigation risk. *MKTCAP* is market capitalization at the beginning of the quarter ($ millions). *PERSIST* is the number of firm-quarters out of the last four when reported earnings beat analyst forecasts divided by 4. |*FE*| is analyst forecast uncertainty. Variable definitions are in Appendix A. Standard errors used to calculate t-statistics (reported in parentheses) are robust to heteroscedasticity and firm level clustering.

insignificantly different from zero ($p = 0.98$), whereas *GDOWN* $*$ *LOW-NOA* is positive and significant ($p < 0.05$). The two coefficients are significantly different from each other ($p = 0.02$).

Table 4, Panel B reports the joint effect of *Q4* and *NOA*. The results show that *DA* and *GDOWN* are positively associated with each other when earnings management is not constrained (*LOW-NOA* and interim quarters) ($p < 0.01$), whereas they are negatively associated ($p < 0.05$) when it is highly constrained (*HIGH-NOA* and fourth quarters). When the two constraints on earnings management are mixed (*HIGH-NOA* and interim quarters or *LOW-NOA* and fourth quarter), the association between *DA* and *GDOWN* becomes weaker. *GDOWN* is insignificantly associated with *DA* during fourth quarters when *NOA* is low ($p = 0.63$). Also, the association between *GDOWN* and *DA* is positive but economically weaker in the interim quarters when *NOA* is high ($p < 0.10$).[15]

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[15] We find qualitatively similar results when we do a pooled sample analysis using indicator variables to indicate *HIGH-* and *LOW-NOA*, and interim and fourth fiscal quarters. Specifically, we find that the association between *DA* and *GDOWN* is insignificantly positive in the interim quarters when *NOA* is high and significantly positive when *NOA* is low ($p < 0.10$). We also find that the association is insignificantly negative in the fourth quarter when *NOA* is low and significantly negative when *NOA* is high ($p < 0.05$). These results, omitted here for the sake of brevity, are available from the authors upon request.

Overall, the results in Table 4 suggest that managers rely on both earnings management and expectation management to achieve earnings targets when their ability to manage earnings is not constrained. When earnings management is highly constrained, however, they substitute expectation management for earnings management. These results extend the literature by providing more generalized evidence that supports both the complementary relationship assumed in the literature and the substitutive relationship documented by Brown and Pinello (2007).

2SLS Estimation

In the OLS tests, our assumption in using downward expectation management (*GDOWN*) as an explanatory variable for discretionary accruals (*DA*) is guided by the general timeline of events within a fiscal quarter, where guidance is provided during the quarter and earnings management is used at the end of the fiscal period. However, given that both instruments are used with the same objective of achieving earnings targets, it is highly likely that they are determined jointly. Consistent with this argument, the Durbin-Wu-Hausman χ^2 tests reject the null hypothesis that *GDOWN* is an exogenous regressor in the regressions reported in Table 4 ($p < 0.01$). Therefore, we re-estimate the relationship between *GDOWN* and *DA* in a system of equations using two-stage least squares (2SLS).[16]

We use the constraints on expectation management as instrumental variables in the expectation management equation. The passage of *RegFD* is clearly exogenous to our system of equations. We conjecture that *SENS*, the stock price sensitivity to earnings surprises, is also determined exogenously because managers have little control over investors' reactions to earnings news. Also, the results in Table 4 show that *RegFD* and *SENS* are not significantly associated with discretionary accruals, thereby making them suitable as instruments for expectation management (Larcker and Rusticus 2010). However, in the case of discretionary accruals, the results reported earlier show that both its constraints are significantly associated with the extent of expectation management. Hence, the choice of appropriate exogenously determined instruments for discretionary accruals is severely restricted. Based on Matsumoto (2002), we use litigation risk as an instrumental variable for discretionary accruals. Litigation risk is largely exogenous and Table 2 shows that it is significantly related to *DA* but not to *GDOWN*, making it an appropriate instrumental variable for *DA*.

Because we are interested in the moderating effect of *NOA* and fourth quarter on the relationship between earnings and expectation management, we need to estimate the relationship conditional on *NOA* and the fourth quarter. Given the difficulty of estimating and interpreting interactions in a 2SLS model, consistent with our OLS analysis, we estimate the system of equations for subgroups of *HIGH*- and *LOW-NOA*, and subgroups of interim and fourth quarters. This yields the following systems of equations:

For each of the *HIGH*- and *LOW-NOA* quartiles:

$$GDOWN = i_0 + i_1 DA + i_2 SENS + i_3 Post\text{-}2000 + i_4 Q4 + \Sigma Control\ variables + \varepsilon_7;$$

$$DA = j_0 + j_1 GDOWN + j_2 HLRISK + j_3 Q4 + \Sigma Control\ variables + \varepsilon_7. \qquad (7)$$

For each of the interim and fourth quarter subgroups:

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[16] Durbin-Wu-Hausman χ^2 statistics testing for the exogeneity of *GDOWN* are reported in Table 5, Panels A and B. They show that in six out of eight subsamples, the null hypothesis that *GDOWN* is an exogenous variable is rejected (*HIGH-NOA*, *LOW-NOA*, interim quarters, fourth quarters, *LOW-NOA* and interim quarters, and *HIGH-NOA* and fourth quarters).

$$GDOWN = k_0 + k_1 DA + k_2 SENS + k_3 Post\text{-}2000 + k_4 NOA + \Sigma Control\ variables + \varepsilon_8;$$

$$DA = l_0 + l_1 GDOWN + l_2 HLRISK + l_3 NOA + \Sigma Control\ variables + \varepsilon_8. \qquad (8)$$

Finally, to estimate the effect of interaction of the *NOA* and fourth quarter constraints on the relationship between earnings and expectation management, we estimate the system for each subgroup of *LOW-NOA* and interim quarters, *HIGH-NOA* and interim quarters, *LOW-NOA* and fourth quarters, and *HIGH-NOA* and fourth quarters.

Table 5, Panel A presents results of this joint estimation for quartiles of low and *HIGH-NOA* (Equation (7)), and for subgroups of interim and fourth quarters (Equation (8)).[17] This estimation provides two main results. First, similar to the results of the univariate tests and OLS estimation, the 2SLS results suggest a complementary relationship between earnings and expectation management when earnings management is relatively less constrained and a substitutive relationship when earnings management is relatively more constrained. The coefficient on *GDOWN* is positive and significant in the *LOW-NOA* quartile (3.302, $p < 0.01$) and interim quarter subgroup (2.041, $p < 0.01$), whereas negative and significant in the *HIGH-NOA* quartile (−1.982, $p < 0.05$) and fourth quarter subgroup (−3.00, $p < 0.01$).

Second, whereas expectation management has a direct effect on earnings management, the converse is not true. The coefficient on *GDOWN* in the *DA* equation is significant at the $p < 0.01$ level in three of four subgroups and significant at the $p < 0.05$ level in the fourth. However, the coefficient on *DA* is significant at the $p < 0.10$ level in only one of the four equations and is insignificant in the remaining three.[18]

This latter result, combined with the usual timeline in which *GDOWN* precedes *DA*, might suggest that the relationship between *DA* and *GDOWN* is recursive and should be estimated as such. However, the following points argue against such a conclusion. First, the literature that examines earnings and expectation management provides little basis for formalizing the timeline assumption. Second, it is clear that both *DA* and *GDOWN* are decision variables used to achieve the same objective, making simultaneous determination more plausible.[19] Third, lead-lag relationships between *DA* and *GDOWN*, ideal for recursive estimation, cannot be established because both instruments are observed and measured at the firm fiscal-quarter level.

While the 2SLS results are qualitatively similar to those of OLS, one finding of note is that the magnitude of the coefficient on *GDOWN* in 2SLS is significantly larger than the magnitude of the corresponding coefficient in OLS. A potential explanation for the large difference is measurement errors in *GDOWN*, biasing the coefficient on *GDOWN* in OLS toward zero (Theil 1971, 608), a problem that is usually mitigated by the instrumental variable approach (Gujarati 2003, 527).[20] A second explanation is that the instrumental variables of *GDOWN* capture a

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[17] When the relationship is estimated using the whole sample the coefficient on *GDOWN* in the *DA* equation is significant at the $p < 0.01$. The coefficient on *DA* in the *GDOWN* model is insignificant.

[18] The constraints on earnings and expectation management continue to be statistically significant determinants of the respective instruments. This is additionally important in the expectation management equation, given the role that the constraints play as instrumental variables. Litigation risk (*HLRISK*), the instrumental variable for *DA*, is significant at the $p < 0.01$ level in three of the four *DA* models. In the *HIGH-NOA* quartile it is marginally significant based on a one-sided t-test ($p < 0.10$).

[19] For example, if the constraints on *DA* are known sufficiently in advance, then the timeline assumption is violated.

[20] To investigate the errors-in-variable explanation, we compare the variance of the raw variable *GDOWN* and that of its predicted value that is used in the second stage regression in 2SLS. Supporting the errors-in-variable explanation, we find that the variance of the raw variable *GDOWN* is significantly larger (0.2092) than that of its predicted value (0.0028). This significant difference in the variances is consistent with the significantly smaller coefficient on *GDOWN* under OLS than under 2SLS (Mroz 1987).

TABLE 5

Relationship between Earnings Management and Expectation Management (Two-Stage Least Squares)

Panel A: Simultaneous Estimation of *DA* and *GDOWN* Conditional on a Single Earnings Management Constraint

	LOW-NOA		*HIGH-NOA*		Interim Quarters		Fourth QTR	
	GDOWN	*DA*	*GDOWN*	*DA*	*GDOWN*	*DA*	*GDOWN*	*DA*
Intercept	0.386***	−0.193	0.447***	0.039	0.326***	−0.439*	0.468***	0.951**
	(11.64)	(−0.42)	(6.10)	(0.09)	(23.48)	(−1.98)	(16.88)	(2.12)
DA	−0.022		0.017		0.049*		0.008	
	(−0.62)		(0.21)		(1.69)		(0.37)	
GDOWN		3.302***		−1.982**		2.041***		−3.00***
		(2.80)		(−2.24)		(3.42)		(−3.30)
SENS	−0.022***		−0.021***		−0.019***		−0.024***	
	(−4.38)		(−3.01)		(−8.89)		(−7.94)	
Post-2000	−0.058***		−0.080***		−0.052***		−0.085***	
	(−7.03)		(−7.45)		(−7.55)		(−7.20)	
HLRISK		−0.268***		−0.122		−0.175***		−0.435***
		(−2.71)		(−1.31)		(−3.36)		(−4.50)
NOA					0.096***	−0.749***	0.129***	−1.183***
					(5.47)	(−6.96)	(4.11)	(−5.41)
Q4	−0.018	−0.813***	0.066	−1.255***				
	(−0.60)	(−7.83)	(0.61)	(−13.09)				
NUMEST	−0.001	−0.020*	0.002*	5.60E−4	0.003*	−0.037***	0.005***	0.017
	(−0.33)	(−1.67)	(1.75)	(0.05)	(1.89)	(−5.87)	(4.29)	(1.44)
log(*MKTCAP*)	0.012***	−0.061	0.012	0.144***	0.011***	0.056**	3.97E−4	0.013
	(3.21)	(−1.33)	(1.17)	(3.82)	(2.95)	(2.50)	(0.11)	(0.32)
PERSIST	−0.213***	0.620*	−0.257***	−0.098	−0.228***	0.836***	−0.286***	−0.441
	(−14.32)	(1.97)	(−7.59)	(−0.37)	(−15.37)	(5.40)	(−17.22)	(−1.42)
|*FE*|	0.523***	−3.451***	0.274*	−1.526***	0.503***	−1.98***	0.305***	−0.885
	(7.12)	(−4.16)	(1.65)	(−2.73)	(11.16)	(−4.92)	(5.16)	(−1.61)

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TABLE 5 (continued)

	LOW-NOA		*HIGH-NOA*		Interim Quarters		Fourth QTR	
	GDOWN	*DA*	*GDOWN*	*DA*	*GDOWN*	*DA*	*GDOWN*	*DA*
Observations	12,104	12,104	12,104	12,104	35,758	35,758	12,659	12,659
Adjusted R^2	4.42%	0.77%	3.76%	2.49%	3.22%	0.36%	6.12%	0.97%

Test of Endogeneity: *GDOWN* (H0: *GDOWN* is exogenous variable)

	Durbin-Wu-Hausman χ^2 test	(p-value)
LOW-NOA	7.172	($p < 0.01$)
HIGH-NOA	5.395	($p = 0.02$)
Interim quarters	10.478	($p < 0.01$)
Fourth quarters	11.062	($p < 0.01$)

Panel B: Simultaneous Estimation of *DA* and *GDOWN* Conditional on Two Earnings Management Constraints

	Interim Quarter and *HIGH-NOA*		Interim Quarter and *LOW-NOA*		Fourth Quarter and *HIGH-NOA*		Fourth Quarter and *LOW-NOA*	
	GDOWN	*DA*	*GDOWN*	*DA*	*GDOWN*	*DA*	*GDOWN*	*DA*
Intercept	−0.058	−0.370	0.367***	−0.741	0.463***	0.595	0.428***	0.260
	(−0.02)	(−0.90)	(11.12)	(−1.31)	(3.54)	(0.48)	(11.26)	(0.31)
DA	−0.687		−0.024		−0.054		−0.003	
	(−0.18)		(−0.68)		(−1.29)		(−0.02)	
GDOWN		−0.566		5.012***		−5.575***		−0.220
		(−0.57)		(3.30)		(−2.88)		(−0.12)
SENS	0.028		−0.022***		−0.013*		−0.022**	
	(0.11)		(−3.77)		(−1.64)		(−2.44)	
Post-2000	−0.126		−0.052***		−0.063**		−0.082***	
	(−0.44)		(−5.13)		(−2.27)		(−3.33)	
HLRISK		0.031		−0.331***		−0.368*		−0.112
		(0.30)		(−2.81)		(−1.66)		(−0.57)
NUMEST	−0.005	−0.008	−1.3E−4	−0.032***	0.008***	0.045	−1.27E−3	1.6E−5
	(−0.17)	(−0.61)	(−0.07)	(−2.25)	(2.93)	(1.54)	(−0.66)	(0.07)
log(*MKTCAP*)	0.080	0.088**	0.013***	−0.034	0.008	0.202**	0.010	−0.139
	(0.25)	(2.01)	(2.82)	(−0.62)	(0.60)	(2.28)	(0.46)	(−1.55)

(continued on next page)

TABLE 5 (continued)

	Interim Quarter and *HIGH-NOA*		Interim Quarter and *LOW-NOA*		Fourth Quarter and *HIGH-NOA*		Fourth Quarter and *LOW-NOA*	
	GDOWN	*DA*	*GDOWN*	*DA*	*GDOWN*	*DA*	*GDOWN*	*DA*
PERSIST	0.091	0.334	−0.206***	0.758**	−0.335***	−1.668**	−0.242***	0.332
	(0.06)	(1.26)	(−10.70)	(2.00)	(−10.12)	(−2.21)	(−3.57)	(0.56)
|*FE*|	−0.669	−1.454*	0.570***	−4.937***	−0.062	−1.793**	0.429**	−0.967
	(−0.11)	(−1.71)	(6.67)	(−4.41)	(−0.51)	(−2.10)	(2.28)	(−0.79)
Observations	8,847	8,847	8,940	8,940	3,257	3,257	3,164	3,164
Adjusted R^2	0.02%	0.28%	4.12%	0.40%	4.78%	1.23%	5.80%	0.001%

Test of Endogeneity: *GDOWN* (H0: *GDOWN* is exogenous variable)

	Durbin-Wu-Hausman χ^2 test	(p-value)
Interim quarters and *HIGH-NOA*	0.558	(p = 0.45)
Interim quarters and *LOW-NOA*	11.311	(p < 0.01)
Fourth quarter and *HIGH-NOA*	9.420	(p < 0.01)
Fourth quarter and *LOW-NOA*	0.031	(p = 0.86)

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*, **, *** Indicate significance at the 0.1, 0.05, and 0.01 levels, respectively (two-tailed).

Panel A reports results of the 2SLS estimation of the relationship between earnings management and expectation management for quartiles of *LOW*- and *HIGH-NOA* (net operating assets at the beginning of the quarter), and for interim and fourth fiscal quarters. The dependent variables are *GDOWN* and *DA*. *GDOWN* is an indicator variable that takes a value of 1 if *Guidance* > 0, 0 otherwise. *Guidance* is the downward revision during the quarter in analyst consensus forecasts of EPS. Discretionary accruals (*DA*) are residuals from a Modified Jones (1991) Model, estimated by two-digit SIC code and year. *DA* is scaled up by 100 for expositional convenience. *SENS* is the sensitivity of stock price to the surprise in earnings in the prior quarter. *HLRISK* denotes industries with high litigation risk. *Q4* denotes the fourth fiscal quarter. *NUMEST* is the number of analyst estimates corresponding to the first consensus analyst forecast. *MKTCAP* is market capitalization at the beginning of the quarter ($ millions). *PERSIST* is the number of firm-quarters out of the last four when reported earnings beat analyst forecasts divided by 4. |*FE*| is analyst forecast uncertainty. Variable definitions are in Appendix A. t-statistics, are reported in parentheses below coefficient estimates, and are based on standard errors that are robust to heteroscedasticity.

Panel B reports results of the 2SLS estimation of the relationship between earnings management and expectation management for four subgroups- interim-quarter/*HIGH-NOA*, interim-quarter/*LOW-NOA*, Fourth-quarter/*HIGH-NOA* and fourth-quarter/*LOW-NOA*. *NOA* is net operating assets at the beginning of the quarter, and *LOW-NOA* and *HIGH-NOA* denote the bottom and top quartiles, respectively. The dependent variables are *GDOWN* and *DA*. *GDOWN* is an indicator variable that takes a value of 1 if *Guidance* > 0, 0 otherwise. *Guidance* is the downward revision during the quarter in analyst consensus forecasts of EPS. Discretionary accruals (*DA*) are residuals from a Modified Jones (1991) Model, estimated by two-digit SIC code and year. *DA* is scaled up by 100 for expositional convenience. *SENS* is the sensitivity of stock price to the surprise in earnings in the prior quarter. *HLRISK* denotes industries with high litigation risk. *NUMEST* is the number of analyst estimates corresponding to the first consensus analyst forecast. *MKTCAP* is market capitalization at the beginning of the quarter ($ millions). *PERSIST* is the number of firm-quarters out of the last four when reported earnings beat analyst forecasts divided by 4. |*FE*| is analyst forecast uncertainty. Variable definitions are in Appendix A. t-statistics, are reported in parentheses below coefficient estimates, and are based on standard errors that are robust to heteroscedasticity.

situation in which the cost of expectation management is significantly larger. Thus, the estimated *GDOWN* using instrumental variables will be significantly smaller than the raw *GDOWN* used in OLS, resulting in a larger coefficient on *GDOWN* in 2SLS.[21,22]

We next estimate the relationship using subgroups determined jointly on the basis of both *NOA* and *Q4*. The results reported in Table 5, Panel B provide additional support for the evidence presented thus far on the relationship between earnings and expectation management. First, the relationship varies conditional on the constraints on earnings management. In the lowest constraint subgroup (i.e., *LOW-NOA* and interim quarters) the coefficient on *GDOWN* in the *DA* regression is 5.012 ($p < 0.01$) reflecting a complementary relationship. In the highest constraint subgroup (i.e., *HIGH-NOA* and fourth quarter) the relationship is substitutive—the coefficient on *GDOWN* is –5.575 ($p < 0.01$). In the intermediate level of constraints (i.e., *LOW-NOA* and fourth quarter, or *HIGH-NOA* and interim quarters), there is no significant association between earnings management and expectation management. Second, as before, expectation management has an effect on earnings management, but not *vice versa*.[23]

Overall, the results show that managers use earnings management and expectation management as *complements or substitutes* depending on whether the constraints on earnings management are low or high, respectively.

V. STOCK PRICE IMPLICATIONS OF EARNINGS MANAGEMENT AND EXPECTATION MANAGEMENT

In this section, we examine the extent to which market participants discern and incorporate the managerial actions suggested by the above findings into stock prices. We use the cumulative abnormal returns (CAR) from two days after the first consensus analyst forecast in the current quarter to two days after the earnings announcement as a measure of the market's response.[24]

Univariate Analysis

Univariate tests in Table 6, Panel A suggest that the reward for meeting or beating analyst forecasts is significantly smaller ($p < 0.01$) when firms use downward expectation management (mean, median CAR of –0.58 percent, –0.26 percent, respectively) than when firms do not (mean, median CAR of 6.63 percent, 5.44 percent, respectively). Similarly, the penalty for firms that manage earnings expectations downward and then fail to meet earnings benchmarks is significantly larger ($p < 0.01$) (mean, median CAR of –9.33 percent, –8.03 percent, respectively) than for those firms that do not manage expectations downward and fail to meet earnings benchmarks (mean, median CAR of –4.08 percent, –3.74 percent, respectively). For the meet/beat group, firms using

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[21] We thank an anonymous reviewer for directing us to this issue and Professor Peter Kennedy for his interest and extensive advice.

[22] A third potential explanation is the strength of the instrumental variables used in our 2SLS estimation. Because the minimum F-statistic for the two instruments in the *GDOWN* regressions is 70 ($p < 0.001$) (Bound et al. 1995), it is unlikely that the large coefficient difference is due to weak instruments.

[23] Following Larcker and Rusticus (2010) we test whether the models are over-identified. Results show that we do not reject the null hypothesis of no over-identification in four of the eight subgroups at traditional levels of significance. However, given the large sample size, this result is not surprising, as suggested by Larcker and Rusticus (2010). Further, given the consistency of the 2SLS results with univariate test results and OLS estimation results, we conjecture that the 2SLS results are not systematically biased due to over-identification in some of the estimations.

[24] Stock returns are adjusted by the contemporaneous return on the corresponding value-weighted CRSP size-decile portfolio. Also, later in this subsection we examine whether our results are robust to measurement of the market response over a shorter three-day window.

TABLE 6

Market Response to Earnings/Expectation Management

Panel A: Univariate Analysis

	Meet/Beat			No Meet/Beat		
	Mean	**Median**	**Observations**	**Mean**	**Median**	**Observations**
Guide down (*GDOWN*)						
Yes	−0.0058	−0.0026	7,719	−0.0933	−0.0803	6,460
No	0.0663	0.0544	24,136	−0.0408	−0.0374	9,539
H0: Difference = 0	t = 24.61	p < 0.01		t = 12.82	p < 0.01	
POSDA						
Yes	0.0415	0.0348	16,039	−0.0602	−0.0544	8,235
No	0.0563	0.0485	15,816	−0.0639	−0.0535	7,764
H0: Difference = 0	t = 5.85	p < 0.01		t = −0.93	p = 0.77	

Panel B: Multivariate Analysis

	Dependent Variable Average Daily Abnormal Return (in %)			
	Long Window		Short Window	
	Model 1	**Model 2**	**Model 3**	**Model 4**
Intercept	0.050***	0.014	−0.010	0.093
	(2.62)	(0.75)	(−0.10)	(0.87)
AFE (p_1)	0.168**	0.176**	1.679**	1.656**
	(2.44)	(2.56)	(2.33)	(2.31)
MBE (p_2)	0.249***	0.226***	1.509***	1.155***
	(23.47)	(26.15)	(23.26)	(21.74)
MBE * *POSDA* (p_3)	−0.031***		−0.267***	
	(−3.09)		(−3.60)	
MBE * *GDOWN* (p_4)	−0.056***		−0.352***	
	(−5.10)		(−5.88)	
POSDA (p_5)	0.007		0.011	
	(0.87)		(0.16)	
GDOWN (p_6)	−0.096***		0.184***	
	(−10.79)		(3.44)	
MBE * *POSDA-GDOWN* (p_7)		−0.058***		−0.214**
		(−4.40)		(−2.41)
MBE * *NOPOSDA-NOGDOWN* (p_8)		0.024**		0.379***
		(2.29)		(4.61)
POSDA-GDOWN (p_9)		−0.048***		0.062
		(−4.62)		(0.87)
NOPOSDA-NOGDOWN (p_{10})		0.040***		−0.124*
		(4.40)		(−1.89)
MBE * *Post-1997*	0.001	−0.000	0.365***	0.373***
	(0.11)	(−0.02)	(4.72)	(4.86)
Post-1997	−0.015	−0.009	−0.333***	−0.343***
	(−0.94)	(−0.60)	(−3.82)	(−3.96)

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TABLE 6 (continued)

	Dependent Variable Average Daily Abnormal Return (in %)			
	Long Window		**Short Window**	
	Model 1	**Model 2**	**Model 3**	**Model 4**
Q4	0.016*	0.008	−0.051	−0.042
	(1.66)	(0.81)	(−0.80)	(−0.68)
LOSS	0.019	0.018	−0.262**	−0.260**
	(0.63)	(0.58)	(−2.50)	(−2.47)
log(*Market-to-Book*)	−0.018*	−0.015	−0.103***	−0.105***
	(−1.84)	(−1.54)	(−2.84)	(−2.92)
log(*MKTCAP*)	−0.021***	−0.022***	−0.087***	−0.086***
	(−9.19)	(−9.52)	(−6.37)	(−6.28)
Observations	47,854	47,854	47,854	47,854
Adjusted R^2	7.11%	6.46%	4.14%	4.13%

Test of Coefficient

Model 2: p2 (0.226) + p7 (−0.058) + p9 (−0.048) = 0: F = 118.71 ($p < 0.01$)

Model 4: p2 (1.155) + p7 (−0.214) + p9 (0.062) = 0: F = 243.92 ($p < 0.01$)

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*, **, *** Indicate significance at the 0.1, 0.05, and 0.01 levels, respectively (two-tailed).

Panel A reports mean and median abnormal returns cumulated over the period from two days after the first consensus analyst forecast in the current quarter (issued after prior quarter earnings are announced) to two days after earnings announcement (CAR). Abnormal returns are calculated by deducting returns on the corresponding value-weighted CRSP size-decile portfolio. Returns are reported separately for firms that meet/beat analyst expectations (Meet/Beat) and those that do not meet analyst expectations (No Meet/Beat). *GDOWN* is an indicator variable that takes a value of 1 if *Guidance* > 0, 0 otherwise. *Guidance* is the downward revision during the quarter in analyst consensus forecasts of EPS. *POSDA* is an indicator variable that takes a value of 1 if discretionary accruals are > 0, 0 otherwise. Discretionary accruals (*DA*) are residuals from a Modified Jones (1991) Model, estimated by two-digit SIC code and year. Median test statistics are based on the Wilcoxon-Mann-Whitney test.

In Panel B the dependent variable is the daily average cumulative abnormal return computed from two trading days after the first consensus analyst forecast in the quarter (issued after prior quarter earnings are announced) until two trading days after the announcement of earnings (Long Window) or computed over the three days around the earnings announcement date (Short Window). Abnormal returns are calculated by deducting returns on the corresponding value-weighted CRSP size-decile portfolio. We multiply the dependent variable by 100 in the regression analysis. *AFE* is actual EPS minus the last analyst consensus forecast of EPS prior to the earnings release scaled by the stock price at the end of the prior fiscal quarter. *MBE* is an indicator variable that takes a value of 1 if *AFE* > 0, 0 otherwise. *POSDA* is an indicator variable that takes a value of 1 if discretionary accruals are > 0, 0 otherwise. Discretionary accruals (*DA*) are residuals from a Modified Jones (1991) Model, estimated by two-digit SIC code and year. *GDOWN* is an indicator variable that takes a value of 1 if *Guidance* > 0, 0 otherwise. *Guidance* is the downward revision during the quarter in analyst consensus forecasts of EPS. *POSDA-GDOWN* is an indicator variable coded 1 if a firm-quarter has positive discretionary accruals and downward expectation management, 0 otherwise. *NOPOSDA-NOGDOWN* is an indicator variable coded 1 if a firm-quarter has neither positive discretionary accruals nor downward expectation management, and 0 otherwise. *Q4* denotes the fourth fiscal quarter. *LOSS* is set to 1 if a firm has negative EPS for the past four quarters consecutively, 0 otherwise. *Market-to-book* is the ratio of market value of equity to book value of equity. *MKTCAP* is market capitalization at the beginning of the quarter ($ millions). Variable definitions are in Appendix A. t-statistics are based on standard errors that are robust to heteroscedasticity and clustering at the firm and calendar quarter level.

income-increasing accrual management have a mean (median) CAR of 4.15 percent (3.48 percent) which is significantly smaller ($p < 0.01$) than 5.63 percent (4.85 percent) for firms in this group that do not rely on earnings management. For firms that fail to meet earnings targets, earnings management does not seem to impact the returns around earnings announcement.[25]

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[25] For firms within this group, the average CAR of −6.02 percent that use earnings management is not statistically different from −6.39 percent for firms that do not use earnings management.

Multivariate Analysis

We next examine whether the meet/beat premium varies with firms' use of income-increasing discretionary accruals (*POSDA* = 1 or 0) and downward guidance (*GDOWN* = 1 or 0), using the following multivariate models:

$$CAR = p_0 + p_1 AFE + p_2 MBE + p_3 MBE * POSDA + p_4 MBE * GDOWN + p_5 POSDA + p_6 GDOWN + \Sigma Control\ variables + \varepsilon_9. \qquad (9)$$

The dependent variable, *CAR*, in Equation (9) is the daily average CAR to account for the varying length of the return windows that we use for our robustness checks.[26] Following Brown and Pinello (2007), we compute the surprise in earnings (*AFE*) as reported earnings minus the last consensus analyst forecast scaled by the closing share price of the prior quarter. The interaction between *MBE* and *POSDA* (*GDOWN*) measures the discount imposed on the meet/beat premium for firms' use of income-increasing discretionary accruals (downward guidance). To explicitly examine the stock price consequence of using *both* earnings management and expectation management (*POSDA* * *GDOWN*), and using *neither* instrument (*NOPOSDA* * *NOGDOWN*), we modify Equation (9) above as follows:

$$CAR = q_0 + q_1 AFE + q_2 MBE + q_3 MBE * POSDA\text{-}GDOWN + q_4 MBE * NOPOSDA - NOGDOWN + q_5 POSDA\text{-}GDOWN + q_6 NOPOSDA\text{-}NOGDOWN + \Sigma Control\ variables + \varepsilon_{10}. \qquad (10)$$

In the above model specification, the indicator variables split the sample into three subgroups—(1) *POSDA-GDOWN* denotes the subgroup of firms where both instruments are used, (2) *NOPOSDA-NOGDOWN* denotes the subgroup of firms where neither instrument is used, and (3) the base case is where only one of the two instruments is used. Thus, the base case in Equation (10) allows for the calculation of incremental penalties (rewards) for the use of both (neither) instruments against the use of any one of the two instruments. Table 6, Panel B reports estimation results for both Equations (9) and (10).

Control variables in Equations (9) and (10) include firm size, measured as market capitalization (*MKTCAP*), the log of the market-to-book ratio of equity (*Market-to-book*), prior-period poor performance (*LOSS*), and *Q4*. Based on the evidence of a temporal shift in the propensity to meet/beat (Brown 2001) and a significant increase in meet/beat premiums after 1997 (Brown and Caylor 2005), we include an indicator variable for the post-1997 period (*Post-1997*) and the interaction between *MBE* and *Post-1997*.[27]

Consistent with our univariate results and Bartov et al. (2002), Model 1 (Equation (9)) shows that the coefficient on the interaction of *POSDA* and *MBE* is negative and significant ($p < 0.01$) suggesting a 0.031 percent daily discount on the meet/beat premium for the use of upward earnings management. The insignificant coefficient on *POSDA* suggests that the use of income-increasing accruals *per se* does not entail any incremental return penalties. For firms that manage expectations downward, the daily discount on the meet/beat premium is −0.056 percent ($p < 0.01$). Moreover, the coefficient on *GDOWN* suggests that, unlike earnings management, the use of downward expectation management *per se* entails a penalty of −0.096 percent ($p < 0.01$).

The results from estimating Equation (10) are reported in Model 2. The negative coefficient on *MBE* * *POSDA-GDOWN* ($p < 0.01$) implies that the decrease in the meet/beat premium is significantly larger when *both* instruments are used than when only either one is used. The positive coefficient on *MBE * NOPOSDA-NOGDOWN* ($p < 0.05$) suggests that the meet/beat premium is larger when neither instrument is used than when either or both instruments are used. Furthermore, the significant negative coefficient on *POSDA-GDOWN* of -0.048 ($p < 0.01$) shows that firms using both instruments and yet failing to meet earnings targets are also subject to an incremental penalty. However, the sum of the coefficients on *MBE, POSDA-GDOWN*, and *MBE * POSDA-GDOWN* is positive ($p < 0.01$), suggesting that even joint use of the instruments is beneficial to stock prices.

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[26] Use of the raw CAR instead of the daily average yields qualitatively similar results.

[27] To account for potential cross-sectional and time-series correlations in returns, standard errors used are robust to clustering at the firm and calendar quarter levels (Cameron et al. 2011; Gow et al. 2010; Petersen 2009). Although, not reported, our results are also robust to clustering at the firm and calendar year levels.

A substantial part of the literature that examines earnings announcement returns does so using short-window returns. To remain consistent with these studies, Models 3 and 4 report the corresponding results for the average market response measured over the three-day window surrounding the earnings announcement. Consistent with the results for the long-window response, Model 3 shows a significant discount for the use of income-increasing accruals ($p < 0.01$) and for the use of downward expectation management ($p < 0.01$). Also consistent with the results of the long window, Model 4 shows that the meet/beat premium is significantly higher when neither is used ($p < 0.01$), and the penalty is larger when both are used ($p < 0.05$) than when either of the instruments is used. Finally, the net effect on stock prices even when both instruments are used is significantly positive ($p < 0.01$). Overall, the results show that, despite the associated penalties, meeting or beating earnings targets via the use of earnings and expectation management, singly or jointly, is beneficial to a firm's stock price, on average.

VI. ROBUSTNESS TESTS

This section discusses results from additional tests conducted to assess the robustness of our main findings.[28]

Alternative Measures of Earnings Guidance

As discussed earlier, our measure of downward revision in the consensus forecast may contain effects beyond firm-specific guidance, such as industry-wide good news or bad news. To allow for movements in consensus forecasts that are not attributable to firm-specific news but would be included in our measure of guidance, we estimate the following models and use the residuals as alternative measures of *Guidance* (*GDOWN*):[29]

$$Guidance = r_0 + r_1 * (Industry\ Returns) + \varepsilon_{11}. \tag{11}$$

$$Prob(GDOWN > 0) = s_0 + s_1 * (Industry\ Returns) + \varepsilon_{12}. \tag{12}$$

In Equations (11) and (12) above, *Industry Returns* is the equal-weighted average returns of firms with the same two-digit SIC code in the contemporaneous window over which *Guidance* is calculated. Prior studies suggest that, consistent with the optimistic bias in analyst forecasts (Richardson et al. 2004), downward revisions in consensus forecasts during the quarter contain an expected component (Kang et al. 1994). Therefore, we also re-estimate residuals from Equations (11) and (12) after including the forecast error that corresponds to the first consensus analyst forecast after the announcement of prior quarter earnings as an additional explanatory variable.[30] As a third alternative proxy for the extent of downward expectation management, we assume an

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[28] For the sake of brevity, tests and associated results are discussed without tabulation. Tabulated results are available from the authors upon request.

[29] We thank the editor, Paul Zarowin, for suggesting this approach.

[30] We thank an anonymous referee for this extension.

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autoregressive process in analysts' forecast revisions and use the generalized residuals from the probit estimation (Comment and Schwert 1995) of downward guidance (*GDOWN*) on lagged downward guidance. The results are robust to replacing *Guidance* (*GDOWN*) with each of these alternative measures.[31]

Alternative Measure of Sensitivity

The literature on guidance and expectation management has not explicitly measured the associated cost. Hence, our proposed measure *SENS* represents the first direct empirical proxy of this cost. Ideally, the cost of expectation management is represented by the stock price sensitivity to managerial guidance. However, the associated data requirement results in severe sample attrition (the sample size drops by more than 80 percent). Similar but less severe sample attrition prevents us from calculating the sensitivity of stock price to individual analyst forecast revisions. Therefore, we develop two other alternative measures to examine whether the results in Table 2 and Table 5 are specific to the measurement of *SENS*. First, we measure sensitivity where returns are cumulated over quarter $q-1$ and divided by the total earnings surprise in quarter $q-1$. The return window starts two trading days after the announcement of quarter $q-2$ earnings and ends two trading days after the announcement of quarter $q-1$ earnings. The total earnings surprise is the reported earnings for $q-1$ minus the first consensus forecast of $q-1$ EPS issued after the announcement of quarter $q-2$ earnings.[32] Our second alternative measure is based on the return sensitivity to consensus forecast revisions during quarter $q-1$. This sensitivity is measured as the ratio of size-adjusted abnormal returns cumulated from the date of the first consensus forecast to the date of the last consensus forecast to the revision in EPS between the same two forecasts. Results using these alternative measures are qualitatively similar to those using *SENS*.

Industry and Leverage Effects Captured by Net Operating Asset

Since its introduction in Barton and Simko (2002), the existing literature has generally accepted net operating assets (*NOA*) as a constraint on discretionary accruals (Hirshleifer et al. 2004; Cheng and Warfield 2005). However, Choy (2003) documents systematic variations in *NOA* across industries. This suggests that it is a noisy measure of firm-specific constraints. To account for industry level information contained in *NOA*, we include indicator variables for the 12 Fama-French industry groups in the OLS (Table 4) and 2SLS models (Table 5). Further, to account for the possibility that *NOA* represents patterns in firms' financing choices rather than constraints on discretionary accruals, we include book leverage (measured as the ratio of long-term debt-to-assets) as an additional explanatory variable in these regressions. Inclusion of these variables, singly or jointly, does not affect the relationship between *GDOWN* and *DA*. As an additional robustness check, we regress lagged *NOA* on indicator variables for the 12 Fama-French industries and use the residuals in place of *NOA* as the constraint on earnings management. We then replicate the 2SLS estimation of the relationship between earnings and expectation management. Similar to *NOA*, we find that the industry-adjusted *NOA* is significant at the $p < 0.01$ level in both the *DA* and *GDOWN* models. Further, the nature and significance of the relationship between *GDOWN* and *DA* remains unchanged. Finally, we find that our results are invariant to these changes while also replacing *GDOWN* with residuals from the probit model discussed in the previous subsection. Overall, we conclude that the estimated relationship between upward earnings management and downward expectation management in Tables 3, 4, and 5 appears robust to industry effects and to variations in the measurement of guidance, *SENS*, and *NOA*.

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[31] Another concern with our measure of guidance has to do with the implications of pooling negative (guide-up) and zero values (zero-guidance). In some cases a zero value of guidance likely represents an unsuccessful attempt by management to guide expectations downward. If this is true, then it is likely that the use of upward earnings management will be higher for the zero-guidance group than for the guide-up group. Indeed, tests show that mean (median) upward earnings management is lower for the guide-up group than for the zero-guidance group ($p < 0.01$). Thus, pooling negative and zero values of guidance is likely to bias against our findings.

[32] As before, if the sensitivity in quarter $q-1$ is zero or negative, then we use the sensitivity in quarter $q-2$. If both lagged sensitivities are zero or negative, then we treat them as missing.

Alternative Return Windows in Tests of Stock Market Reaction

While Table 6 examines stock price reactions measured over long and short windows that are consistent with prior studies, we also examine two alternative windows. First, investors need the full quarterly reports to estimate the level of discretionary accruals. To account for potential delays in the availability of accrual information, we extend the long-return window to 50 calendar days after the fiscal quarter-end.[33] Second, it is possible that some of the benefits of earnings and expectation management seen within two days after the earnings announcement are reversed at a later time. Although we cannot control for all future events, we examine whether potential reversals occurring within the next fiscal quarter influence our results by extending the return window to include the whole duration of the next fiscal quarter. Re-estimation of the regressions in Table 6 shows that our results are robust across both the alternative return windows.

Alternative Model Specification for Tests of Stock Market Reaction

The specifications in Table 6 are modifications of the model used in Bartov et al. (2002). To ensure the robustness of our results, and to be consistent with the literature on earnings response coefficients in short windows, we also examine an alternative specification in which, similar to the meet/beat indicator (*MBE*), the earnings surprise (*AFE*) is also interacted with *POSDA* and *GDOWN*. This alternative specification does not alter our inferences regarding the cost-benefit trade-off of earnings and expectation management both for the return windows used in Table 6, as well as the alternative return windows used in the previous subsection.

VII. SUMMARY AND CONCLUSION

Extant literature has extensively examined managerial use of earnings management and downward guidance of earnings expectations to achieve earnings targets. In spite of the common goal of these instruments, research examining them has largely focused on their independent use. We extend this literature by examining the relationship between earnings management and expectation management as a function of their respective constraints and each other. Using existing measures of the cost associated with earnings management (fourth quarter and *NOA*) and introducing the notion of the cost of expectation management and its empirical proxies (*SENS* and RegFD), we provide evidence that managers use earnings management and expectation management as *complements or substitutes* depending on whether constraints on earnings managements are low or high, respectively. The substitution of earnings management with expectations management extends beyond the fourth-quarter effects documented by Brown and Pinello (2007). We also provide evidence on the expected, but hitherto undocumented, regularity that the extent of earnings and expectation management are each negatively associated with their respective costs.

We also document that constraints on earnings management are positively associated with the extent of expectation management, whereas constraints on expectation management do not affect the extent of earnings management. The simultaneous estimation results suggest that, even though constraints on expectations management do not directly affect earnings management, they indirectly influence the relation between earnings and expectation management through their impact on expectation management.

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[33] This measurement window, also used in Bartov et al. (2002), accounts for the fact that quarterly reports must be made available within 45 days of the quarter-end.

Given the use of earnings and expectation management to achieve earnings targets, a natural question is whether investors decipher such managerial actions, and if so, whether stock prices reflect these actions. Our results show that the meet/beat premium is discounted for independent as well as joint use of earnings management and expectation management. We also find a large penalty for the use of downward expectation management *per se*. Overall, we find that, in spite of the discounts and penalties, stock prices benefit from the use of these instruments—whether used separately or jointly, the "net" premium to meeting/beating earnings benchmarks is significantly positive. This net benefit is a potential explanation for the persistence in managerial use of earnings and/or expectations management.

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APPENDIX A

Variable Descriptions

AFE = analysts' forecast error, measured as the current period's earnings per share (EPS) minus the last analyst consensus forecast of EPS before earnings are announced, scaled by the stock price at the end of the prior fiscal quarter;

DA = discretionary accruals are residuals from the following Modified Jones (1991) Model (Kothari et al. 2005) estimated by two-digit SIC and year:

$$ACC_q/Assets_{q-1} = a_0 + a_1{*}(1/Assets_{q-1}) + a_2{*}[(\Delta Sales - \Delta AR)_q/Assets_{q-1}] + a_3{*}(PP\&E_q/Assets_{q-1}) + a_4{*}ROA_q + e.$$

ACC_q = total accruals are measured as (the change in non-cash current assets − the change in current liabilities excluding the current portion of long-term debt − depreciation and amortization)/lagged total assets; with reference to Compustat Quarterly data items (legacy version) these are: ($Data40_q - Data40_{q-1}$) − ($Data36_q$ − $Data\ 36_{q-1}$) − ($Data49_q - Data49_{q-1}$) + ($Data45_q - Data45_{q-1}$) − $Data5_q$;

$Assets_{q-1}$ = total assets (Data44) in quarter $q-1$;

$\Delta Sales$ = change in sales ($Data2_q - Data2_{q-1}$);

ΔAR = change in receivables ($Data103_q$);

$PP\&E$ = property, plant, and equipment ($Data118_q$); and

ROA = return on assets ($Data8_q/Data44_{q-1}$).

For expositional convenience, we multiply *DA* by 100 throughout the study, i.e., *DA* is reported in percent;

$|FE|$ = forecast uncertainty, measured as the absolute value of [(the current quarter EPS minus the first consensus analyst forecast of EPS in the current quarter)/closing price of the current quarter];

Guidance = the walk-down of analyst forecasts, measured as the first consensus analyst forecast of EPS after prior quarter earnings are announced minus the last consensus analyst forecast for quarter q before quarter q earnings are announced; for expositional convenience, we multiply *Guidance* by 100 throughout the study;

GDOWN = indicator variable for firm-quarters with downward expectation management set to 1 if *Guidance* > 0, and 0 otherwise;

HLRISK = indicator variable for high litigation risk set to 1 if the firm belongs to one of the following industries: biotechnology (SIC 2833–2836), computer (SIC 3570–3577, 7370–7374), electronics (SIC 3600–3674) and retailing industry (SIC 5200–5961);

LOSS = indicator variable set to 1 if a firm has negative EPS for the past four quarters consecutively;
MBE = indicator variable for firm-quarters in which a firm meets or beats analyst consensus forecast set to 1 if earnings surprise (*AFE*) ≥ 0, and 0 otherwise;
MKTCAP = market capitalization at the beginning of the quarter, $(\text{Data14} * \text{Data61})_{q-1}$:
Market-to-book = market-to-book ratio of equity at the beginning of the quarter: $(\text{Data14} * \text{Data61})_{q-1}/\text{Data59}_{q-1}$;
NOA = lagged net operating assets scaled by total assets (Hirshleifer et al. 2004): $[(\text{Data44} - \text{Data36}) - (\text{Data44} - \text{Data45} - \text{Data51} - \text{Data53} - \text{Data55} - \text{Data59})]_{q-1}/\text{Data44}_{q-2}$;
NUMEST = number of analyst estimates at the beginning of quarter q;
PERSIST = fraction of the past four firm-quarters when a firm met/beat analyst forecasts, measured by the number of firm-quarters when *AFE* ≥ 0 divided by 4;
Post-1997 = indicator for the post-1997 period set to 1 if year > 1997, and 0 otherwise;
Post-2000 = indicator for the post-2000 period set to 1 if year > 2000, and 0 otherwise;
ROA = return on assets $(\text{Data8}_q/\text{Data44}_{q-1})$;
POSDA = indicator for positive discretionary accruals set to 1 if discretionary accruals > 0, and 0 otherwise;
Q4 = indicator for the fourth fiscal quarter set to 1 for fourth quarters, and 0 otherwise; and
SENS = price sensitivity to earnings surprises, measured as the cumulative abnormal return around the earnings announcement (day -1, 0, $+1$) in quarter $q-1$ divided by the dollar surprise in EPS in quarter $q-1$; abnormal returns are stock returns minus returns on the CRSP value-weighted index; the dollar surprise in EPS is measured as the last consensus analyst forecast for quarter $q-1$ minus actual EPS for quarter $q-1$.

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Cash Flow Patterns as a Proxy for Firm Life Cycle

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ABSTRACT: This study develops a firm life cycle proxy using cash flow patterns. The patterns provide a parsimonious indicator of life cycle stage that is free from distributional assumptions (i.e., uniformity). The proxy identifies differential behavior in the persistence and convergence patterns of profitability. For example, return on net operating assets (RNOA) does not mean-revert (spread of 7 percent after five years between mature and decline firms) when examined by life cycle stage, which has implications for growth rates and forecast horizons. Further, determinants of future profitability such as asset turnover and profit margin are differentially successful in generating increases in profitability conditional on life cycle stage. Finally, investors do not fully incorporate the information contained in cash flow patterns and, as a result, undervalue mature firms. The cash flow proxy is a robust tool that has applications in analysis, forecasting, valuation, and as a control variable for future research.

Keywords: *life cycle; fundamental analysis; forecasting; profitability; rates of return; return on assets.*

Data Availability: *All data are available from public sources identified in the paper.*

I. INTRODUCTION

Business firms are evolving entities, with the path of evolution determined by internal factors (e.g., strategy choice, financial resources, and managerial ability) and external factors (e.g., competitive environment and macroeconomic factors). Firm life cycles are distinct phases that result from changes in these factors, many of which arise from strategic activities undertaken by the firm. Although firm life cycle stages have important implications for understanding the financial performance of firms, research efforts to develop a robust approach to

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measuring firm life cycle stages and investigating their implications for financial analysis and valuation are sparse at best (Anthony and Ramesh 1992).

Capturing life cycle at the firm level (rather than at the individual product or industry level)[1] is a difficult undertaking. Firms are aggregations of multiple products, each with a distinct product life cycle stage. Additionally, the firm can compete in multiple industries, such that its product offerings are quite diverse. As a result, *firm-level* life cycle stage is difficult to assess because it is a composite of many overlapping, but distinct, *product* life cycle stages. However, the economics literature has addressed individual attributes of life cycle theory such as production behavior (Spence 1977, 1979, 1981; Wernerfelt 1985; Jovanovic and MacDonald 1994), learning/experience (Spence 1981), investment (Spence 1977, 1979; Jovanovic 1982; Wernerfelt 1985), entry/exit patterns (Caves 1998), and market share (Wernerfelt 1985). By combining the implications from these research studies, I develop a parsimonious firm-level life cycle proxy based on the predicted behavior of operating, investing, and financing cash flows across different life cycle stages.[2] Unlike prior attempts at developing life cycle proxies (e.g., Anthony and Ramesh 1992), my classification methodology is "organic" in that life cycle stage identification is the result of firm performance and the allocation of resources, as opposed to an *ad hoc* assignment.[3]

This study is important for several reasons. First, several financial accounting and financial statement analysis textbooks frequently refer to the link between cash flows and life cycle stage (see, for example, Stickney et al. 2010, 210–212; Kieso et al. 2010, 1246–1247; Kimmel et al. 2009, 606; among others). While these books often graphically depict cash flows over the product life cycle, there is scarce empirical evidence to support these assertions. This study provides a rigorous analysis of the relation between cash flows, future performance, and life cycle fundamentals.

Second, I find that the cash flow pattern proxy is better aligned with the functional form of firm profitability than competing classification schemes. Economic theory predicts a nonlinear relation between life cycle stages and performance variables such as earnings, return on net operating assets (RNOA),[4] asset turnover (ATO), profit margin (PM), sales revenue, leverage, dividend payout, size, and age, which is consistent with the distribution that results from using cash flow patterns as a life cycle proxy.

Third, the cash flow pattern proxy for life cycle identifies differential behavior in the persistence and intertemporal convergence patterns of profitability. Previous research documents that profitability measures mean-revert over time (Brooks and Buckmaster 1976; Freeman et al. 1982; Fairfield et al. 1996; Fama and French 2000; Nissim and Penman 2001) and understanding the evolution of profitability improves predictability. Specifically, I find that RNOA maintains a differential spread of 3 to 10 percent between decline and mature firms even five years after initial life cycle portfolio formation. This difference is economically significant and suggests that differences in firm life cycle are an impediment to the mean-reversion of profitability.

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[1] The following studies examine the validity of product life cycle for the following industries: German automobile manufacturers (Brockhoff 1967); pharmaceuticals (Cox 1967); tobacco, food, and personal care products (Polli and Cook 1969); and household cleansers (Parsons 1975).

[2] Lev and Zarowin (1999) document that: (1) the rate of business change has increased over time, and (2) the value-relevance of earnings has decreased over time. Taken together, these findings suggest that a non-earnings-based measure that captures firm life cycle stage would be useful to investors and creditors.

[3] Anthony and Ramesh (1992) conducted one of the first studies to demonstrate the usefulness of firm life cycle in explaining market performance. However, their sample period ended before the Statement of Cash Flows was a required disclosure. Therefore, their life cycle measure relied on a composite of economic characteristics such as sales growth, dividend payout, capital expenditures, and firm age. By necessity, their life cycle proxy had to rely on portfolio sorts to draw distinctions between life cycle stages.

[4] RNOA removes the effect of financing from profitability and is measured as operating income divided by net operating assets (NOA) (Nissim and Penman 2001). NOA excludes financial assets from the denominator because they are already valued at fair value on the balance sheet. NOA also subtracts out operating liabilities from operating assets. This adjustment is made because operating liabilities reflect a source of leverage that can increase profitability.

Fourth, the life cycle measure developed in this study possesses explanatory power for future profitability. Prior research has demonstrated that changes in future accounting returns (specifically RNOA) are explained by level and change of current profitability, growth in net operating assets, and by increases in asset turnover (ATO) (Fairfield and Yohn 2001). Given that firm life cycle stage differentially explains profitability, including the cash flow pattern proxy for life cycle also provides incremental information about future change in RNOA, and the cash flow pattern proxy outperforms alternative life cycle proxies. Further, I find that the effect of changes in ATO for changes in future RNOA is concentrated in mature firms. This pattern is consistent with theory that predicts competitive pressures drive mature firms to focus on efficiency and cost containment (Selling and Stickney 1989). Also, Penman and Zhang (2006) find that increases in profit margin (PM) result in negative future RNOA because those increases are achieved through a reduction of operating expenses that are not sustainable. Again, this effect is concentrated in mature firms, where product differentiation efforts (which manifest in PM) have reached a stage of diminishing returns (Oster 1990; Shy 1995).

Finally, the cash flow pattern proxy is associated with market inefficiency with respect to equity share prices. Because life cycle stage affects convergence of profitability and interacts with the determinants of future profitability, the cash flow pattern classification plays a role in understanding firm value and in predicting stock returns. The market does not fully incorporate information provided by the life cycle proxy, such that mature firms earn positive excess returns in the year following life cycle stage signal. This finding indicates that investors underestimate the persistence of the elevated profitability of mature firms and instead expect their profitability to mean-revert to "normal" levels during the subsequent year.

In summary, this study presents and validates cash flows patterns as a parsimonious proxy for identifying firm life cycle stage. The classification potentially benefits both practitioners (e.g., investors, creditors, analysts, auditors, and regulators) and researchers in the following contexts: (1) to better assess growth rates and forecast horizons in valuation models; (2) to better understand how economic fundamentals affect the level and convergence properties of future profitability; (3) to identify firms for which potential unidentified risk factors and/or market mispricing exist based on differences in life cycle stage; and (4) as a control variable for distinct economic characteristics related to firm life cycle that affect performance.

II. DEVELOPMENT AND DESCRIPTIVE VALIDATION OF THE CASH-FLOW-BASED LIFE CYCLE CLASSIFICATION

Gort and Klepper (1982) define five life cycle stages: (1) *introduction* where an innovation is first produced; (2) *growth* where the number of producers increases dramatically; (3) *maturity* where the number of producers reaches a maximum; (4) *shake-out* where the number of producers begins to decline; and (5) *decline* where there is essentially a zero net entry. I propose that cash flows capture the financial outcome of these distinct life cycle stages. Livnat and Zarowin (1990) document that the decomposition of cash flows into operating, investing, and financing activities differentially affects stock returns. Therefore, cash flows capture differences in a firm's profitability, growth, and risk, and the combination of the three types of cash flows are mapped into life cycle theory to derive the life cycle classification used throughout the study. Table 1 summarizes a survey of economic theory related to life cycle and the related predictions of cash flows by type.

TABLE 1

Economic Links to Cash Flow Patterns

Cash Flow Type	Introduction	Growth	Mature	Shake-Out	Decline
Operating	Firms enter market with knowledge deficit about potential revenues and costs (Jovanovic 1982)	Profit margins are maximized during period of greatest investment (Spence 1977, 1979, 1981)	Efficiency maximized through increased knowledge of operations (Spence 1977, 1979, 1981; Wernerfelt 1985)	Declining growth rates lead to declining prices (Wernerfelt 1985) Routines of established firms hinder competitive flexibility (Hannan and Freeman 1984)	Declining growth rates lead to declining prices (Wernerfelt 1985)
	(−) Cash Flows	**(+) Cash Flows**	**(+) Cash Flows**	**(+/−) Cash Flows**	**(−) Cash Flows**
Investing	Managerial optimism drives investment (Jovanovic 1982) Firms make early large investments to deter entry (Spence 1977, 1979, 1981)	Firms make early large investments to deter entry (Spence 1977, 1979, 1981)	Obsolescence increases relative to new investment as firms mature (Jovanovic 1982; Wernerfelt 1985)	Void in theory	Liquidation of assets to service debt
	(−) Cash Flows	**(−) Cash Flows**	**(−) Cash Flows**	**(+/−) Cash Flows**	**(+) Cash Flows**
Financing	Pecking-order theory states firms access bank debt then equity (Myers 1984; Diamond 1991) Growth firms increase debt (Myers 1977; Jensen 1986; Barclay and Smith 2005)	Pecking-order theory states firms access bank debt then equity (Myers 1984; Diamond 1991) Growth firms increase debt (Myers 1977; Jensen 1986; Barclay and Smith 2005)	Focus shifts from acquiring financing to servicing debt and distributing excess funds to shareholders, such that mature firms decrease debt (Myers 1977; Jensen 1986; Barclay and Smith 2005)	Void in theory	Focus on debt repayment and/or renegotiation of debt
	(+) Cash Flows	**(+) Cash Flows**	**(−) Cash Flows**	**(+/−) Cash Flows**	**(+/−) Cash Flows**

Cash Flows' Mapping to Life Cycle Theory

The combination of cash flow patterns represents firms' resource allocations and operational capabilities interacted with their strategy choices. Predictions about each individual cash flow component (operating, investing, or financing) are derived from economic theory, which forms the basis for the life cycle proxy.

Cash Flows from Operations

Introduction firms lack established customers and suffer from knowledge deficits about potential revenues and costs, both of which result in negative operating cash flows (Jovanovic 1982). Profit margins are maximized during increases in investment and efficiency (Spence 1977, 1979, 1981; Wernerfelt 1985), which means that operating cash flows are positive during the growth and maturity stages. Wernerfelt (1985) points out that declining growth rates eventually lead to declining prices, such that operating cash flows decrease (and become negative) as the firm enters the decline stage.

Cash Flows from Investing

Managerial optimism (Jovanovic 1982) encourages firms to make early investments that deter competitors' entries into the market (Spence 1977, 1979, 1981). Consequently, investing cash flows are negative for introduction and growth firms. While mature firms decrease investment relative to growth firms, they continue to invest to maintain capital (Jovanovic 1982; Wernerfelt 1985). If maintenance costs increase over time (i.e., rising prices), then investing cash flows are negative for mature firms, although at a lesser magnitude than investing cash outflows for introduction and growth firms. Decline firms liquidate assets in order to service existing debt and to support operations, which results in positive cash flows from investing.

Cash Flows from Financing

Pecking order theory predicts firms initially access bank debt followed later by equity issuances (Myers 1977, 1984; Diamond 1991). Barclay and Smith (2005) explain that firms attempt to balance the tax benefits of debt (i.e., deductibility of interest expense) against costs of distress from over-borrowing. Introduction or growth firms need debt to grow, but as they increase their leverage, they will eventually need to decrease cash flow as they service debt (Myers 1977; Barclay and Smith 2005). However, Barclay and Smith (2005) point out that the anticipation of less liquidity in the future leads to underinvestment in positive net present value projects as the firm grows. Taken together, financing cash flows are expected to be positive for at least introduction (and likely growth) firms as they access credit for expansion.

By their definition, mature firms have exhausted their positive net present value projects, meaning they have fewer investment opportunities in the future (unless they propel themselves back to the growth stage). This lack of opportunity minimizes the need for additional borrowing, even though these firms are in the best financial position to do so (Barclay and Smith 2005). However, Jensen (1986) suggests the opposite is true in that mature firms generate positive cash flows and consequently overinvest in their core business (or an unrelated acquisition), albeit at lower returns.

Mature firms then, either begin to service debt and distribute cash to shareholders because they have exhausted their positive net present value investment opportunities, or they overinvest in suboptimal projects that diminish their overall profitability. The signaling literature indicates that firms distribute free cash flows to investors to prove that they are not investing in value-destroying endeavors (Jensen 1986; Barclay and Smith 2005; Oler and Picconi 2010). Assuming signaling theory and lack of opportunities outweigh the overinvestment problem, I predict that mature firms pay down their debt and/or repurchase equity, resulting in negative financing cash flows. There is a void in the literature with respect to financing cash flows for decline firms so no directional prediction is made *ex ante*.[5]

Formulation of the Life Cycle Proxy

The *combination* of a firm's net operating, investing, and financing cash flows provide a firm life cycle mapping at each financial statement date. Varying the sign (positive or negative) of the three types of net cash flows, results in eight possible cash flow pattern combinations.[6] I collapse the eight classifications into five theoretical life cycle stages (mentioned at the beginning of the section): introduction, growth, mature, shake-out, and decline, based on expected cash flow behaviors from Table 1.[7]

A benefit of the cash flow pattern proxy is that it uses the entire financial information set contained in operating, investing, and financing cash flows rather than a single metric to determine firm life cycle. As mentioned in the previous section, prior research sorts on variables such as age, sales growth, capital expenditures, dividend payout, or some composite of these variables to assess life cycle stage (Anthony and Ramesh 1992; Black 1998). The drawback of these methods, however, is that an *ex ante* assumption is inherently required with respect to the underlying distribution of life cycle membership. Forming portfolios sorted on a single variable (or a composite of variables), assumes that a uniform distribution of firm-observations across life cycle stages is descriptive. Conversely, cash flow pattern classification is the organic result of firms' operations and achieves better congruence with economic theory (i.e., a normal distribution).

Size and Age as Life Cycle Proxies

Both size and firm age are common proxies for life cycle found throughout the literature.[8] An implicit assumption when using size or age as a proxy is that a firm moves monotonically through its life cycle. This assumption arises because *product* life cycles are characterized by forward progression from introduction to decline. However, a firm is a portfolio of multiple products, each potentially at a different product life cycle stage. Substantial product innovations, expansion into

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[5] Likewise, the literature is silent regarding cash flows for shake-out firms. Consequently, shake-out firms are classified by default if the cash flow patterns do not fall into one of the other theoretically defined stages.

[6] Incorporating sign *and* magnitude of cash flows would likely improve performance of the proxy. However, if positive (negative) cash flows were separated into low- and high-positive (negative) cash flows, then the number of patterns would increase to 64, which is less straightforward when connecting to economic theory. Only the sign is considered in this study.

[7] There are three net cash flow activities (operating, investing, and financing) and each type can take a positive or negative sign, resulting in $2^3 = 8$ possible combinations. The eight patterns are collapsed into five stages as follows:

	1 Introduction	2 Growth	3 Mature	4 Shake-Out	5 Shake-Out	6 Shake-Out	7 Decline	8 Decline
Predicted Sign								
Cash flows from operating activities	−	+	+	−	+	+	−	−
Cash flows from investing activities	−	−	−	−	+	+	+	+
Cash flows from financing activities	+	+	−	−	+	−	+	−

[8] Recent accounting research that relies on firm size or age to capture life cycle effects includes Bradshaw et al. (2011), Bhattacharya et al. (2004), Caskey and Hanlon (2007), Chen et al. (2002), Desai et al. (2006), Doyle et al. (2007), Khan and Watts (2009), Klein and Marquardt (2006), and Wasley and Wu (2006). An abstract search for "firm age" in SSRN yielded 592 results, while a search for "firm size" exceeded the maximum results of 1,000 studies.

new markets, and/or structural change can cause firms to move across life cycle stages nonsequentially. For that reason, *firm* life cycle can be cyclical in nature, and a firm should strive to maintain its life cycle position somewhere between the growth and mature stages where the reward-risk structure is optimized.

Theoretically, firms can enter decline from any of the other stages. The management literature documents a "liability of newness" phenomenon (Stinchcombe 1965; Jovanovic 1982; Freeman et al. 1983; Amit and Schoemaker 1993), which means that the level of initial endowments (monetary resources, technological or managerial capability, etc.) interacts with mortality rates.[9] As such, firms in the decline stage are likely to include young firms that succumb to initially high mortality rates.

Finally, experiential learning causes a divergence between firm life cycle and firm age. Firms of the same age can learn at different rates because of imperfections in their feedback mechanisms (i.e., accounting quality). All of the factors mentioned above lead to a misalignment between performance and firm age, manifesting in a nonlinear relation between life cycle and age. Based on theoretical predictions outlined throughout this section, size and age are expected to adopt an inverted U-shape across life cycle stages (from introduction to decline). However, both factors will be maximized in the mature stage because of the decrease in moral hazard rates for firms that successfully reach maturity.

Validation of the Cash Flow Patterns Proxy

The first step in the analysis is to validate whether life cycle stages based on cash flow patterns are consistent with economic theory. I describe the sample below and then outline the validation process.

Sample Selection

The sample is comprised of firms listed on the NYSE, AMEX, and NASDAQ exchanges (excluding ADRs) with necessary data on Compustat. The sample period extends from 1989 (first year the Statement of Cash Flows was available for all firms) through 2005. Firms with average net operating assets (NOA), sales revenue, absolute book value of equity, or market value of equity less than $1 million are excluded from the sample because small denominators skew profitability ratios. Finally, financial firms are excluded because capital constraints materially alter their cash flow structure relative to other industries. These criteria result in a final sample of 48,369 firm-year observations.

Frequency Distribution by Life Cycle Stage

Mature firms are characterized by stability, while the decline stage is transitory. Given these characteristics, I expect the greatest (lowest) frequency of observations in the mature (decline) stage. Table 2, Panel A confirms this prediction with 41 (5) percent of firm-observations classified as mature (decline).

Descriptive Analysis of Alternative Life Cycle Proxies

Table 2 examines whether economic characteristics vary predictably with life cycle stages as determined by cash flow patterns (Panel A) and by the Anthony and Ramesh (1992; hereafter, AR)

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[9] Jovanovic (1982) presents an analytical model where firms' hazard rates (probability of failure) initially increase in early life cycle stages.

TABLE 2

Economic Characteristics by Life Cycle Stage

Panel A: Life Cycle Stage Defined by Cash Flow Patterns

	Pooled	Introduction	Growth	Mature	Shake-Out	Decline
n	48,369	5,752	16,423	19,920	3,861	2,413
% of total n	100.00%	11.89%	33.95%	41.18%	7.98%	4.99%
EPS	0.61	−0.19	0.71	0.98	0.30	−0.47
RNOA	8.61%	−11.81%	9.37%	10.68%	7.23%	−31.45%
PM	4.57%	−6.79%	5.63%	5.62%	3.65%	−20.15%
ATO	1.95	2.02	1.85	2.03	1.90	1.80
GrSALES	9.97%	18.93%	16.54%	6.61%	2.03%	4.86%
GrNOA	7.28%	24.09%	19.00%	1.40%	−7.58%	−1.75%
MB	1.91	2.05	2.05	1.88	1.56	1.74
LEV	0.19	0.10	0.30	0.22	−0.02	−0.28
ASSET BETA	0.73	1.02	0.74	0.63	0.83	1.31
DIVPAY	15.38%	2.60%	13.54%	21.95%	15.05%	3.18%
ADVINT	0.98%	1.23%	0.82%	1.02%	1.03%	1.09%
INNOV	4.97%	14.47%	2.74%	1.54%	4.44%	24.55%
SEGMENTS	2.59	1.99	2.57	2.80	2.71	2.09
MERGER	17.70%	18.40%	27.05%	11.68%	10.05%	12.22%
SIZE	5.39	4.36	5.68	5.78	4.85	4.28
AGE	10.43	6.18	9.19	15.13	11.87	6.96

Panel B: Life Cycle Stage defined by Anthony and Ramesh (1992)

	Pooled	Growth	Gr/Mat	Mature	Mat/Stag	Stagnant
n	48,369	8,169	7,135	7,814	7,640	11,527
% of total n	100.00%	19.32%	16.87%	18.48%	18.07%	27.26%
EPS	0.61	0.20	0.40	0.46	0.65	1.39
RNOA	8.61%	4.72%	8.18%	8.40%	8.26%	9.53%
PM	4.57%	1.98%	4.11%	4.17%	4.17%	5.90%
ATO	1.95	1.96	1.98	1.99	1.95	1.82
GrSALES	9.97%	20.85%	12.45%	9.34%	7.05%	5.36%
GrNOA	7.28%	15.11%	8.98%	6.13%	4.01%	3.76%
MB	1.91	2.27	1.99	1.80	1.68	1.84
LEV	0.19	−0.10	0.07	0.16	0.27	0.44
ASSET BETA	0.73	1.21	0.87	0.75	0.66	0.53
DIVPAY	15.38%	1.20%	3.78%	8.12%	15.35%	39.11%
ADVINT	0.98%	1.05%	0.95%	0.93%	0.80%	0.95%
INNOV	4.97%	10.03%	5.57%	4.42%	3.32%	1.18%
SEGMENTS	2.59	1.94	2.27	2.41	2.78	3.52
MERGER	17.70%	24.31%	19.67%	16.38%	14.54%	13.22%
SIZE	5.39	5.11	5.12	4.96	5.27	6.62
AGE	10.43	4.33	7.56	10.37	16.27	27.86

The sample period is from 1989 to 2005. All data presented are the mean of annual medians except for total number of observations, dividend payout ratio, advertising, innovation, number of segments, and mergers, which are the means of annual means.

(continued on next page)

TABLE 2 (continued)

All profitability variables are computed as in Nissim and Penman (2001) and are defined in Appendix A. Variables are measured as follows: Earnings per share (*EPS*) is measured before extraordinary items (#58). Return on net operating assets (*RNOA*) = Operating Income (OI_t)/Average Net Operating Assets (*NOA*). Profit margin (*PM*) = Operating Income (*OI*)/Net sales (#12). Asset Turnover (*ATO*) = Net Sales)/Average Net Operating Assets (*NOA*). Growth in Sales (*GrSALES*) is defined as (Net Sales/Lagged Net Sales$_t$) − 1. Growth in *NOA* (*GrNOA*) is defined as (*NOA*/*NOA*) − 1. Market-to-Book (*MB*) = Market Value of Equity/Book Value of Equity (#60). Leverage (*LEV*) = Net Financial Obligation/Common Equity (#60). *ASSET BETA* = mean market model beta from a regression of daily raw returns on the value-weighted market return over the prior 250 days adjusted for leverage. Dividend Payout Ratio (*DIVPAY*) = Common Dividends (#21)/Net Income (#172). Advertising Intensity (*ADVINT*) = Advertising Expense (#15)/Net Sales (#12). Innovation (*INNOV*) = [R&D (#46) plus Amortization Expense (#65)/Net Sales (#12)]. *SEGMENT* = number of segments reported in the Compustat segment files. *MERGER* = percentage of firms that have "AA" codes in Compustat (AFTNT1). *SIZE* = log of market value of equity. *AGE* = log of the number of years since the firm's first appearance in the CRSP database. All variables are winsorized at the 1st and 99th percentiles to mitigate the influence of extreme values.

classification (Panel B).[10,11] AR compute the median values of dividend payout, sales growth, and capital expenditures (scaled by market value) over a five-year horizon. Those values, along with age, are used to assign scores to each observation.[12] Their study uses composite scores to form five equal-sized portfolios, which they label growth, growth/mature, mature, mature/stagnant, and stagnant.

Economic theory predicts that profitability is maximized in maturity, as evidenced by earnings per share (*EPS*) and return on net operating assets (*RNOA*) in Panel A. However, the AR classification (Panel B) displays maximum profitability in the stagnant stage, which is inconsistent with expectations. Next, I examine the components of profitability, profit margin, and asset turnover, all of which are a function of strategy and the competitive environment. Selling and Stickney (1989) indicate that product-differentiating firms focus on research and development, advertising, and capacity growth. Such expenditures should result in a higher profit margin (*PM*), which the cash flow pattern results (Panel A) show is maximized in the growth (5.63 percent) and mature (5.62 percent) stages. Once again, the AR measure (Panel B) reports the maximum in the stagnant stage (5.90 percent).

Selling and Stickney (1989) also predict that, as firms mature, competition intensifies and the operational emphasis shifts to cost reduction and improved capacity utilization. This prediction translates into elevated expected asset turnover ratios (*ATO*) in maturity, confirmed in Panel A (2.03 for mature firms). The high level of *ATO* in the introduction stage (2.02) could be explained by investments in uncapitalized assets such as research and development and/or operating leases. Immediate expensing of these expenditures results in lower GAAP asset levels, which in turn increases *ATO* relative to mature stage firms.[13] *ATO* using the AR measure, however, does not substantially vary across life cycle stages, except for a lower turnover for stagnant firms (1.82 in Panel B), which is also found in the cash flow pattern classification. The *EPS*, *RNOA*, *PM*, and *ATO* results indicate that cash flow patterns are better aligned with profitability than is the AR proxy.

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[10] Table 2 is not a test of any hypotheses, but provides descriptive evidence on how a parsimonious accounting-based life cycle classification can capture potentially complex inter-relationships among firm characteristics that are suggested by economic theory.

[11] Age quintile classification results are qualitatively similar to the AR measure for all economic variables.

[12] Terciles of low to high dividend payout, high to low sales growth, high to low capital expenditure, and young to old age were given scores of 1 to 3, respectively. The composite scores ranged from 3 to 9 as in Anthony and Ramesh (1992).

[13] I thank one of the reviewers for this insight.

Growth in sales (*GrSALES*) and in capital investment (*GrNOA*) should monotonically decrease across life cycle stages (Spence 1977, 1979, 1981), both of which are verified in Panel A (cash flow patterns) for introduction through shake-out (median *GrSALES* and *GrNOA* decline from 18.93 to 2.03 percent and from 24.09 to −7.58 percent, respectively). The negative median *GrNOA* for the shake-out and decline stages is consistent with these firms liquidating net operating assets (either via restructuring or distress). The AR measure (Panel B) also declines monotonically from growth to Stagnant, by construction (median *GrSALES* and *GrNOA* decline from 20.85 to 5.36 percent and from 15.11 to 3.76 percent, respectively). Market-to-book (*MB*) has been used in prior research to proxy for both expected growth and risk, suggesting that mature firms should demonstrate the lowest relative market-to-book as compared with the tail observations. However, Panel A demonstrates a monotonic decline in *MB* through shake-out firms (similar results obtain for the AR measure in Panel B), which indicates that the *MB* measure appears to better reflect growth, than risk. Overall, both life cycle proxies capture growth as predicted by economic theory.

With respect to other measures of risk, I examine financial leverage (*LEV*) and asset beta (*ASSET BETA*) (an unlevered measure of business risk). Firms are expected to utilize more debt in the growth stage (Myers 1984; Diamond 1991) and growth firms demonstrate maximum *LEV* in Panel A (0.30). Using the AR measure (Panel B), however, stagnant firms report the highest *LEV* (0.44). Asset beta is expected to be minimized for mature firms (confirmed in Panel A, mature = 0.63). Again, the AR measure reports the minimum *ASSET BETA* for stagnant firms (0.53), contrary to theory. Dividends (*DIVPAY*) are more likely to be paid by mature firms due to decreased investment opportunities (confirmed by the maximum dividend payout of 21.95 percent for mature firms in Panel A). Conversely, stagnant firms display the highest *DIVPAY* (by construction) for the AR proxy (39.11 percent) in Panel B. Clearly, the cash flow proxy is a better indicator of economic expectations than the AR measure, with respect to risk and the investment opportunity set.

Next, I investigate advertising, innovation, and acquisition behavior. Advertising intensity (*ADVINT*) and research and development (*INNOV*) are predicted to be higher in early-stage firms as they build their initial technology. Cash flow patterns (Panel A) report elevated *ADVINT* and *INNOV* in the introduction stage (1.23 percent and 14.47 percent of sales revenue, respectively). Decline firms also appear to increase their research and development (24.55 percent of revenue), perhaps in either a turnaround attempt or because revenue has decreased at a faster rate than the decrease in R&D spending. Similarly, the AR measure (Panel B) reports the maximum *ADVINT* and *INNOV* for growth firms (1.05 percent and 10.03 percent of revenues, respectively). The number of segments (*SEGMENTS*) is expected to increase through maturity, as growth is executed via product and/or geographical expansion, which are borne out in the results (the highest number of segments is found among mature firms in Panel A). Conversely, the highest number of segments is found in the stagnant stage for the AR measure. This finding is questionable because distressed firms will likely restructure and/or sell off underperforming segments to raise capital. Merger activity (*MERGER*) is predicted to be higher for growth firms, as they are likely to be acquisition targets. The results in Panel A indicate that the introduction and growth stages are where the highest degree of activity takes place (18.40 and 27.05 percent of all merger activity, respectively). The AR measure (Panel B) is similar; however, merger proportions are less distinct across stages than in the cash flow pattern classification. Taken together, the cash flow pattern proxy is more consistent with economic predictions for advertising, innovation, and acquisition behavior than is the AR classification scheme.

Finally, size (*SIZE*) and age (*AGE*) are maximized for mature firms in Panel A (5.78 and 15.13, respectively), consistent with life cycle being nonlinear in both of these variables. In Panel B, both size and age are maximized for stagnant firms (6.62 and 27.86, respectively), which highlight the linearity of the AR measure. To summarize the descriptive statistic results, the cash flow patterns proxy is more consistent with economic theory underlying the life cycle phenomenon.[14] Thus, the results in Table 2, demonstrate that cash flow patterns successfully capture firm life cycle stage.

Survivorship and Transition

Survivorship

Survivorship bias is an inherent issue in intertemporal analyses. Table 3, Panel A examines the proportion of firms that survive five subsequent years beyond life cycle identification at year *t*. The sample period now spans from 1989 to 2000 to ensure that each firm-observation has five years of data available for analysis, which reduces the sample size to 33,088 firm-year observations. Only 78.15 percent of firms survive five years ahead in the pooled sample. Mergers, transition to private ownership, or bankruptcy are possible reasons for sample attrition. The last two columns of Table 3, Panel A display the proportion of firms that delist for merger or performance-related reasons according to their life cycle stage membership in the year prior to delisting.[15] Z-statistics (two-tailed) are reported on tests of whether delisting proportions by life cycle stage significantly differ from a uniform distribution across stages (all Z-statistics are statistically significant at $p < 0.05$). Over 65 percent of merger activity involves growth or mature firms, and over 68 percent of performance-related delistings involve introduction or decline firms.

I repeat the survivorship analysis on the proportion of surviving firms in each life cycle stage relative to that of the pooled sample for each year subsequent to life cycle identification. Z-Statistics (two-tailed) are computed for differences in proportion between each life cycle stage and the pooled sample. Survival rates for mature (decline) stage firms are significantly higher (lower) than survival rates for the pooled sample in all subsequent years. The introduction and growth survival rates are significantly lower than that of the pooled sample for year $t+3$ through $t+5$. Therefore, the survivorship analysis confirms the stable nature of mature firms relative to the remaining life cycle stages.

Transition

Table 3, Panel B examines the transition of firm-observations from one life cycle stage to another in subsequent periods. Once again, a reduced sample ($n = 33,088$) is necessary to ensure five years of data subsequent to initial life cycle stage classification. Bold data represent the proportion of firms that remain in their initial stage beyond the initial portfolio formation year. For example, 60.13 percent of mature firms remain in mature one year after initial classification and this proportion monotonically decreases to 55.97 percent by year $t+5$, noting that the mature proportions are highest among the life cycle classifications in each subsequent year.

Several observations are worth noting from this analysis: (1) introduction firms are likely to stay in introduction or to move to the growth or mature stage (over 80 percent of observations at the

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[14] It is possible that results reported in Table 2 are due to industry effects. If life cycle is actually an industry phenomenon, then a simple industry control would capture differences across firms. The economics literature suggests industry life cycle patterns occur because the rate of innovation and intensity of competition change over the industry life cycle. However, individual firms' life cycle stages can differ *within* an industry because innovation is a continuing process with firms entering and exiting the market throughout the entire industry life cycle. Furthermore, life cycle stages of individual firms within an industry vary due to differences in a firm's knowledge acquisition, initial investment and re-investment of capital, and adaptability to the competitive environment. All tests throughout this study were replicated on industry-adjusted samples using Fama and French (1997) industry classifications (results untabulated). Results are consistent with those reported in the tables. Therefore, firm life cycle stage is a distinct phenomenon from industry life cycle stage.

[15] Cash flow data are insufficient for computing life cycle stage in the year in which the delisting takes place. Delisting codes of 200–299 are categorized as merger and codes of 500–599 are categorized as performance-related (Beaver et al. 2007).

TABLE 3

Survival Rate and Transition Matrix Analyses

Panel A: Survival Analysis: Proportion of Firms that Survive beyond Portfolio Formation Period[a]

Stage at Portfolio Formation	*t*+1	*t*+2	*t*+3	*t*+4	*t*+5	Percent Delisted Merger	Percent Delisted Perf.
Pooled	100.00%	93.45%	87.74%	82.77%	78.15%		
n = 33,088							
Introduction	100.00	93.11	86.70	81.36	76.44	15.30	41.53
Z-stat	—	*−0.796*	*−1.887*	***−2.230***	***−2.477***	***−4.615***	***15.008***
n = 4,121							
Growth	100.00	92.98	86.84	81.53	76.95	32.04	11.98
Z-stat	—	*−1.732*	***−2.518***	***−3.020***	***−2.677***	***9.640***	***−6.858***
n = 11,742							
Mature	100.00	94.26	89.20	84.75	80.33	33.79	7.78
Z-stat	—	***3.233***	***4.401***	***5.179***	***5.198***	***10.382***	***−10.891***
n = 13,424							
Shake-Out	100.00	92.82	87.17	82.07	76.59	10.87	11.68
Z-stat	—	*−1.161*	*−0.790*	*−0.849*	*−1.760*	***−8.753***	***−7.820***
n = 2,409							
Decline	100.00	91.74	85.42	79.45	75.14	8.01	27.03
Z-stat	—	***−2.459***	***−2.536***	***−3.167***	***−2.624***	***−12.186***	***5.183***
n = 1,392							

Panel B: Transition Analysis: Proportion of Observations by Life Cycle Stage beyond Portfolio Formation Period (n = 33,088)[b]

Stage at Portfolio Formation	Stage in Future Period	*t*+1	*t*+2	*t*+3	*t*+4	*t*+5
Introduction	Introduction	**36.93**	**30.11**	**27.48**	**26.21**	**23.66**
	Growth	22.46	23.64	25.75	27.58	27.73
	Mature	19.72	23.80	25.33	27.26	29.13
	Shake-Out	8.28	8.82	8.50	8.04	8.43
	Decline	12.61	13.62	12.94	10.90	11.07
Growth	Introduction	7.71	6.84	6.30	6.26	5.89
	Growth	**51.39**	**45.06**	**42.47**	**40.92**	**38.66**
	Mature	33.11	38.27	40.71	41.82	43.23
	Shake-Out	5.72	7.36	7.45	7.85	8.66
	Decline	2.07	2.47	3.07	3.15	3.55
Mature	Introduction	4.44	5.07	5.24	5.10	4.98
	Growth	27.68	29.07	28.42	28.58	28.85
	Mature	**60.13**	**57.02**	**56.63**	**56.13**	**55.97**
	Shake-Out	6.11	7.03	7.78	8.17	8.13
	Decline	1.64	1.81	1.94	2.01	2.07
Shake-Out	Introduction	10.07	9.53	10.02	10.26	9.35
	Growth	22.99	25.30	26.62	25.46	28.17
	Mature	41.57	41.80	42.89	43.85	43.72
	Shake-Out	**18.41**	**16.09**	**14.07**	**13.31**	**12.78**
	Decline	6.96	7.28	6.39	7.11	5.98

(continued on next page)

TABLE 3 (continued)

Stage at Portfolio Formation	Stage in Future Period	$t+1$	$t+2$	$t+3$	$t+4$	$t+5$
Decline	Introduction	28.18	29.04	28.91	26.23	25.83
	Growth	14.16	17.03	20.24	19.69	23.36
	Mature	16.78	18.76	19.39	22.50	20.31
	Shake-Out	13.07	11.30	11.31	11.25	12.49
	Decline	**27.81**	**23.86**	**20.15**	**20.33**	**18.02**

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[a] Base years range from 1989 to 2000 so that five subsequent years are available for each observation (sample period extends to 2005).

Delisting data are extracted from the CRSP Event database and are computed for all observations with adequate cash flow data to compute the life cycle stage in the *year prior* to delisting. CRSP categorizes delistings as follows: 200–299 are mergers and 500–599 are dropped securities due to performance. The proportion of delistings due to mergers (inadequate performance) is computed by life cycle stage and reported in the second to the last (last) column.

Z-statistics (in italics below the proportion) from a test of equal proportions is computed for each life cycle stage relative to the pooled sample for the years subsequent to life cycle identification; and for each stage relative to a uniform distribution for the delisting categories. Z-statistics in bold indicate a significant difference in proportions at $p < 0.05$ significance level (two-tailed).

[b] Base years range from 1989 to 2000 so that five subsequent years are available for each observation (sample period extends to 2005). For each life cycle stage at the time of portfolio formation (year t), this table reports the proportion of surviving firms by life cycle stage for each year subsequent to the life cycle identification year.

Bold data represent the proportion of firms that remain in their initial stage beyond the initial portfolio formation year.

end of five years), (2) growth firms are fairly stable, but a large proportion (ranging from 33.11 in year $t+1$ to 43.23 percent by year $t+5$) will move to mature, (3) growth and mature firms are not likely to move to decline (less than 3.6 and 2.1 percent, respectively, are in decline by year $t+5$), (4) mature firms are stable and approximately 30 percent transition back to growth over the next five years (i.e., re-innovate), (5) a small proportion of decline firms remain in decline (only 18 percent after five years), but movement to introduction (25 percent by year 5), growth (23 percent), mature (20 percent) or shake-out (12 percent) is also fairly common. Taken together, introduction and decline firms tend to improve their position, whereas growth and mature firms are relatively stable in subsequent periods.

III. LIFE CYCLE AND FUTURE PROFITABILITY

Previous research documents that profitability measures mean-revert over time (Brooks and Buckmaster 1976; Freeman et al. 1982; Fairfield et al. 1996; Fama and French 2000; Nissim and Penman 2001) and understanding the evolution of profitability improves predictability. Stigler (1963) reports that profitability displays a strong central tendency, but that convergence is incomplete. He states that impediments to complete convergence stem from disturbances related to shifts in demand, advances in technology, and macroeconomic factors. I posit that another potential impediment to convergence is differential profitability by firm life cycle stage.

Properties of Profitability by Life Cycle Stage

Convergence Properties of Profitability by Life Cycle Stage

Nissim and Penman (2001) suggest that truncated horizons can be used in forecasting if valuation attributes "settle down" to permanent levels within the forecast horizon. Therefore, understanding convergence properties of profitability can lead to better decisions with respect to growth rates and forecast horizons. Specifically, if convergence properties differ across life cycle stage, this information can be used to refine valuation parameters for subsets of firms according to their current life cycle stage.

To examine the convergence characteristics of profitability by life cycle stage, I examine the mean of annual median values of *RNOA* over a five-year period subsequent to the initial life cycle identification period. These results are reported in Table 4, Panel A. Pooled *RNOA* is relatively constant over time, ranging from 8.30 to 9.12 percent. Likewise, the mature stage is characterized by stable profitability with *RNOA* ranging between 10 and 11 percent. However, *RNOA* of both introduction and decline firms increase monotonically over time.

Figure 1 depicts median values from Table 4, Panel A. Median *RNOA* by life cycle stage partially converges by the third year, but the difference in median *RNOA* between mature firms (10.41 percent) and decline firms (3.26 percent) is distinct five years subsequent to year *t* (difference of 7.15 percent, which is substantial given that the median *RNOA* for the sample is 9.12 percent in the portfolio formation year). Growth and shake-out firms have relatively stable *RNOA* over the subsequent five years, but the magnitude of *RNOA* is lower than that of mature firms. In fact, mature firms maintain a sustainable advantage over the other life cycle stages, while introduction firms earn considerably less even after five years (*RNOA* is 10.41 percent for mature firms compared to 5.31 percent for introduction firms). Therefore, convergence of *RNOA* remains incomplete at the end of five years, indicating that life cycle stage information substantially impacts forecasts of future *RNOA*.

Magnitude of Profitability by Life Cycle Stage

Nissim and Penman (2001, Figure 4b) form deciles of *RNOA* and examine convergence of the deciles over five years subsequent to decile formation to document how *RNOA* evolves over time. They report a persistent difference in *RNOA* between the highest and lowest decile of *RNOA* even after five years. If the differences in persistence are attributable to firm life cycle, then I would expect to see an over-representation (under-representation) of introduction and decline (mature) firms in the lowest (highest) *RNOA* deciles. To test this assertion, I examine the frequency of observations by *RNOA* decile membership across life cycle stages in Table 4, Panel B.

Consistent with expectations, Table 4, Panel B shows that nearly two-thirds of introduction firms (66 percent) and three-fourths of decline firms (78 percent) reside within the lowest three deciles of *RNOA*. Comparatively, only 17 percent of mature firms are contained within the lowest three *RNOA* deciles. Therefore, a partial explanation for the non-convergence of *RNOA* reported in Nissim and Penman's (2001) study is attributable to differences in firm life cycle stage. Specifically, the mean-reversion of Nissim and Penman's (2001) lowest deciles of firms is driven largely by improvements in performance experienced by introduction firms and by decline firms that survive beyond the decile formation year. However, the highest deciles (those shown to decline over time in Nissim and Penman [2009]) are not overpopulated in any particular life cycle stage. Therefore, consideration of life cycle stage explains the mean-reversion properties of low-profitability firms.

Explaining Future Profitability by Life Cycle Stage

Benchmark Model of Future Profitability

Given the differences in *RNOA* demonstrated in the previous sections, information about firm life cycle stage should be useful in explaining *future* profitability. I adapt Fairfield and Yohn's (2001) model of future profitability to test the incremental effect of life cycle stage in explaining one-year-ahead change in *RNOA*.[16] I include current profitability (both level and change in current *RNOA*) in the benchmark model because current profitability is known to be serially correlated with

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[16] Forecasts of future profitability are improved when based upon operating income rather than GAAP net income (Fairfield et al. 1996; Nissim and Penman 2001). Therefore, excluding the financing portion of the firm focuses the analysis on the sustainability of operating profitability.

TABLE 4

Analysis of Return on Net Operating Assets (*RNOA*) by Life Cycle Stage

Panel A: Median *RNOA* by Life Cycle Stage beyond Portfolio Formation Period

	Pooled	Introduction	Growth	Mature	Shake-Out	Decline
n	33,088	4,121	11,742	13,424	2,409	1,392
% of total n	100.00%	12.45%	35.49%	40.57%	7.28%	4.21%
Year Relative to Formation						
t	9.12%	−4.18%	9.54%	11.01%	8.26%	−16.30%
t+1	8.53	−1.75	8.38	10.74	7.85	−9.08
t+2	8.30	1.30	7.86	10.34	7.96	−4.86
t+3	8.43	3.15	7.84	10.27	8.37	0.30
t+4	8.71	4.56	8.03	10.50	8.60	0.59
t+5	8.93	5.31	8.19	10.41	9.45	3.26

Panel B: Proportion of Observations in Each *RNOA* Decile across Life Cycle Stages

	Pooled	Introduction	Growth	Mature	Shake-Out	Decline
n	48,369	5,752	16,423	19,920	3,861	2,413
% of total n	100.00%	11.89%	33.95%	41.19%	7.98%	4.99%
RNOA Decile						
Lowest		35.95%	3.57%	2.44%	12.04%	50.73%
2		19.66	8.32	6.57	14.69	19.31
3		10.57	10.97	8.92	12.04	7.67
4		7.09	11.54	10.48	8.70	4.68
5		5.49	11.70	11.31	7.10	2.86
6		5.09	11.37	11.71	7.46	2.49
7		5.18	10.91	12.08	7.80	1.82
8		4.73	9.89	12.86	7.93	2.98
9		3.76	10.13	12.73	9.35	2.69
Highest		2.47	11.59	10.90	12.90	4.77
Total		100.00%	100.00%	100.00%	100.00%	100.00%

Likelihood Ratio Chi-Square: 11,311.17 ($p < 0.001$).

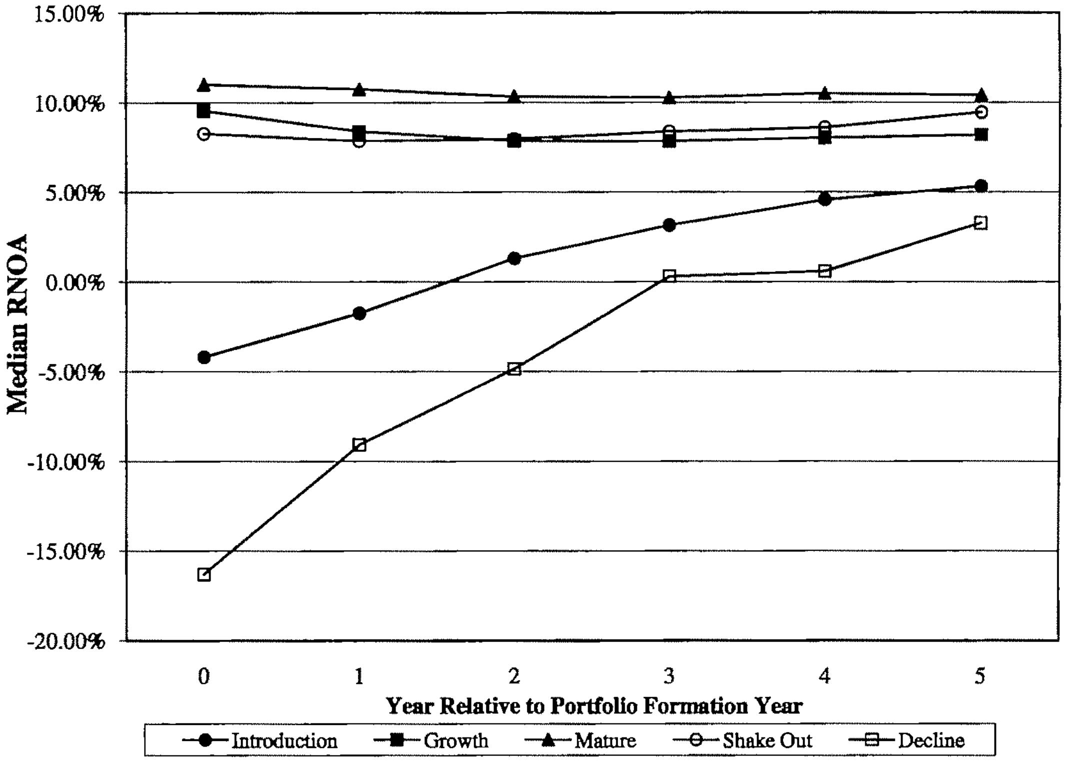
The sample period is 1989 to 2000 for Panel A and from 1989 to 2005 for Panel B.

Panel A requires five subsequent years of portfolio formation to ensure that the results are not affected by a truncated time period. Return on net operating assets (*RNOA*) is the mean of the annual medians and is measured as Operating Income (OI_t)/Average Net Operating Assets (*NOA*).

In Panel B, the proportion of each *RNOA* decile is analyzed by life cycle stages. A test of equal proportions across *RNOA* deciles by life cycle stage is rejected with a Likelihood Ratio Chi-Square of 11,311.17 ($p < 0.001$).

future profitability. Coefficients on current *RNOA* and Δ*RNOA* are expected to be negative, insofar as prior research has shown profitability to be mean-reverting (Brooks and Buckmaster 1976; Freeman et al. 1982; Fairfield and Yohn 2001). Future changes in profitability are also affected by the denominator, or growth in NOA. The model controls for growth (*GrNOA*) to ensure that changes in future profitability are not driven solely by changes in investment. Prior research has shown the coefficient on *GrNOA* to be negative because investment in NOA is subject to diminishing returns (Fairfield and Yohn 2001).

FIGURE 1
Convergence Analysis
Median *RNOA* by Life Cycle Stage beyond Portfolio Formation Period
(n = 33,088)



For the sample period 1989 to 2000, Life Cycle Stage is determined at time zero and the means of the annual median *RNOA* for each life cycle stage is computed for each of the five subsequent years to initial life cycle portfolio formation.

RNOA is decomposed into two components: asset turnover (ATO) and profit margin (PM). Asset turnover indicates the amount of assets needed to generate sales, whereas profit margin indicates a firm's ability to convert sales into profit. A cost leadership strategy is aimed at improving asset turnover, while a product differentiation strategy is oriented toward improving profit margin. Fairfield and Yohn (2001) examine the effect of both levels and changes in ATO and PM on future change in RNOA.[17] Changes in ATO are indicative of increased efficiency in production and should represent permanent sources of profitability, such that a positive relation with future profitability is expected (Fairfield and Yohn 2001; Penman and Zhang 2006). Penman and Zhang (2006) find a negative relation between change in profit margin and future profitability. They suggest that an increase in PM is derived from a current reduction in operating expenses, which is not sustainable and thus has negative consequences for future profitability.

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[17] Fairfield and Yohn (2001) report that current levels of ATO and PM are not informative in forecasting one-year-ahead change in RNOA but that *change* in ATO is positively related to one-year-ahead change in RNOA.

Incorporating Life Cycle into Future Profitability Models

Next, I add alternate life cycle proxies (i.e., cash flow patterns, Anthony and Ramesh's [1992] classification, and age quintiles) to determine which classification scheme best explains future profitability. Thus, Model 1 is:

$$\Delta RNOA_{t+1} = \alpha + \beta_1 RNOA_t + \beta_2 \Delta RNOA_t + \beta_3 GrNOA_t + \beta_4 \Delta ATO_t + \beta_5 \Delta PM_t + \sum_{k=1}^{4} D_k LC_t + \varepsilon_{t+1}. \tag{1}$$

Life cycle stages are captured by indicator variables set to 1 if the firm-year observation is in that stage, 0 otherwise. Thus, the intercept captures either mature firms (for cash flow patterns and the AR classification) or middle-aged firms (for age quintiles).[18] Table 5 reports results from estimating Model 1. All standard errors reported throughout the analyses are robust with respect to firm and year clustering (Gow et al. 2010) and all tests of significance are two-tailed. The profitability coefficients (*RNOA*, *ΔRNOA*, *GrNOA*, *ΔATO*, and *ΔPM*) in Model 1 are statistically significant (with the exception of the *ΔPM*) and are in the predicted direction for each of the three life cycle proxy specifications.

To facilitate the discussion of the life cycle variables, Table 5 reports (and I will discuss) life cycle coefficients as the total effect on change in future profitability (the intercept representing mature firms plus the incremental effect for each of the remaining life cycle stages in turn, D_k), but t-statistics reported in the table pertain to the incremental difference in coefficients between each life cycle stage and the reference group, i.e., mature/mature/old (captured in the intercept).

Each of the life cycle stage coefficients are statistically significant in the cash flow patterns specification, with the mature stage representing positive future change in profitability (coefficient = 0.039, $p < 0.01$). Remaining life cycle stages are all negatively related to future change in profitability (although the shake-out stage is only marginally negative). In the AR classification, the introduction stage is significantly and negatively related to future change in profitability (coefficient = −0.040, $p < 0.01$), similar to the cash flow patterns proxy. However, the AR specification displays significant positive associations with future profitability for the shake-out and decline stages (coefficients = 0.023 and 0.035, respectively, both with $p < 0.01$), which is counter to theory. All age quintile life cycle stages, with the exception of mature, have significant associations with one-year-ahead change in profitability, but the results are, again, counter-intuitive. Specifically, shake-out and decline firms (representing mid-old and old firms, respectively) are positively related to future profitability (coefficients = 0.026 and 0.034, respectively, both with $p < 0.01$). Again, the results using age as a life cycle proxy are inconsistent with expectations. Therefore, life cycle stage as measured by cash flow patterns is most aligned with theoretical expectations of future profitability.

Incorporating Life Cycle Interactions into Future Profitability Models

Fairfield and Yohn (2001) find ΔATO to be informative for explaining future profitability, and economic theory suggests that mature firms should benefit most from improvements in efficiency (Spence 1977, 1977, 1981; Wernerfelt 1985). This expectation occurs because mature firms generate higher-than-normal profits, which attracts competition from existing firms and new

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[18] The following alignments were made across classification schemes (cash flow patterns/AR/age quintiles): introduction/growth/young, growth/growth-mature/mid-young, mature/mature/middle, shake-out/mature-stagnant/mid-old, and decline/stagnant/old.

TABLE 5

Explanatory Power of Life Cycle Stages for Future Change in RNOA
(t-statistics in parentheses)
(n = 48,369)

Variable	Predicted Sign	CF Pattern		A&R		Age Quintiles	
		Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
RNOA	–	**−0.327**	**−0.326**	**−0.297**	**−0.299**	**−0.298**	**−0.296**
		(−24.24)	(−24.11)	(−23.54)	(−23.59)	(−23.58)	(−23.20)
Δ*RNOA*	–	**−0.074**	**−0.073**	**−0.079**	**−0.080**	**−0.079**	**−0.079**
		(−5.80)	(−5.56)	(−6.18)	(−6.30)	(−6.16)	(−6.17)
GrNOA	–	**−0.019**	**−0.020**	**−0.027**	**−0.022**	**−0.022**	**−0.023**
		(−3.45)	(−3.59)	(−4.10)	(−3.94)	(−3.92)	(−4.06)
Δ*ATO*	+	**0.014**		**0.015**		**0.015**	
		(3.25)		(3.48)		(3.52)	
Δ*PM*	–	−0.013		−0.017		−0.015	
		(−0.69)		(−0.88)		(−0.81)	
Introduction	–	**−0.121**	**−0.081**	**−0.040**	**−0.042**	**−0.030**	**−0.033**
		(−11.81)	(−11.37)	(−3.77)	(−4.09)	(−4.05)	(−4.34)
Growth	+/–	**−0.031**	**0.008**	0.001	0.001	**−0.019**	**−0.018**
		(−7.92)	(−7.82)	(1.01)	(0.76)	(−3.18)	(−3.10)
Mature	+	**0.039**	**0.038**	−0.007	−0.005	0.005	0.005
		(14.89)	(15.23)	(−1.48)	(−1.14)	(0.96)	(0.98)
Shake-Out	+/–	**−0.001**	**−0.000**	**0.023**	**0.023**	**0.026**	**0.026**
		(−4.42)	(−4.31)	(4.52)	(4.38)	(3.52)	(3.64)
Decline	–	**−0.142**	**−0.146**	**0.035**	**0.035**	**0.034**	**0.034**
		(−8.54)	(−8.64)	(8.68)	(8.57)	(5.43)	(5.64)
Introduction × Δ*ATO*			0.011		0.017		0.012
			(−1.39)		(0.69)		(−0.91)
Growth × Δ*ATO*			**0.007**		0.022		0.020
			(−2.15)		(1.04)		(−0.14)
Mature × Δ*ATO*	+		**0.028**		0.010		**0.022**
			(3.59)		(1.65)		(2.29)
Shake-Out × Δ*ATO*			0.007		0.022		0.012
			(−1.64)		(1.07)		(−0.69)
Decline × Δ*ATO*			0.018		0.010		0.000
			(−0.64)		(0.04)		(−1.53)
Introduction × Δ*PM*			−0.016		**0.069**		0.036
			(1.26)		(3.08)		(1.45)
Growth × Δ*PM*	+		−0.074		−0.012		−0.066
			(−0.18)		(1.03)		(−0.67)
Mature × Δ*PM*	–		**−0.066**		**−0.060**		−0.031
			(−2.07)		(−2.17)		(−0.78)
Shake-Out × Δ*PM*			−0.011		−0.049		−0.098
			(0.93)		(0.19)		(−1.12)
Decline × Δ*PM*			**0.029**		−0.093		−0.097
			(1.98)		(−0.64)		(−0.84)
Adj. R^2		16.54%	16.65%	16.09%	16.27%	16.08%	16.23%

(continued on next page)

TABLE 5 (continued)

Vuong Test Comparing:	**Model 1**		**Model 2**	
	Z-statistic	**p-value**	**Z-statistic**	**p-value**
CF Patterns over A&R	4.19	<0.01	2.04	0.042
CF Patterns over Age	3.89	<0.01	1.67	0.095

The sample period is from 1989 to 2005.

Coefficients that are significant at $p < 0.05$ (two-tailed) are in bold. All t-statistics in parentheses are adjusted for clustering by firm and year (Gow et al. 2010).

The dependent variable is $\Delta RNOA_{t+1}$. The reported coefficients for the life cycle variables are the total effect on $\Delta RNOA_{t+1}$ (the intercept capturing the reference group, mature, plus the incremental effect of the other life cycle stage, estimated with indicator variables). However, the t-statistics pertain to whether the mature stage coefficients are different from zero or whether the other life cycle coefficients are statistically different from the mature stage coefficient.

Vuong statistics (two-tailed) report the explanatory power of the cash flow pattern classification over the AR or age classifications.

The following alignments were made across classification schemes (cash flow patterns/AR/age quintiles): introduction/growth/young, growth/growth-mature/mid-young, mature/mature/middle, shake-out/mature-stagnant/mid-old, and decline/stagnant/old.

All profitability variables are computed as in Nissim and Penman (2001) and are defined in Appendix A. Return on net operating assets (*RNOA*) = Operating Income (*OI*)/Average Net Operating Assets (*NOA*). Growth in *NOA* (*GrNOA*) is defined as (*NOA*/Lagged *NOA*) − 1. Asset turnover (*ATO*) = Net sales (Compustat #12)/Average Net Operating Assets (*NOA*). Profit margin (*PM*) = Operating Income (*OI*)/Net sales (#12). All variables are winsorized at the 1st and 99th percentiles to mitigate the influence of extreme values.

entrants into the product market. In order to maintain the level of current profitability, mature firms must concentrate on cost containment and production efficiency as competition intensifies. Selling and Stickney (1989) suggest that operational gains in efficiency are reflected in improvements in ATO. Therefore, I predict that the explanatory power of ΔATO for future profitability is concentrated in mature firms (i.e., a positive coefficient on the interaction term *Mature* × *ΔATO*).

Product differentiation efforts should be reflected in higher profit margins (Selling and Stickney 1989), and growth firms are likely to exert the greatest effort to establish their brand identity and market share (Spence 1977, 1979, 1981). This suggests that growth firms have the greatest benefit in the future from current expenditures on product differentiation, such that I expect a positive coefficient on the interaction between growth firms and change in PM, *Growth* × *ΔPM*. However, given the results in Penman and Zhang (2006) that increases in profitability due to increases in profit margin are not sustainable, I expect the incremental benefit of the product differentiation strategy to be mitigated by the time a firm reaches maturity. This reasoning suggests that the interaction, *Mature* × *ΔPM*, should be negatively correlated with future changes in profitability. Model 2 below tests:

$$\Delta RNOA_{t+1} = \alpha + \beta_1 RNOA_t + \beta_2 \Delta RNOA_t + \beta_3 GrNOA_t + \beta_4 \Delta ATO_t + \beta_5 \Delta PM_t + \sum_{k=1}^{4} D_k LC + \sum_{k=1}^{4} \delta_{4k}(\Delta ATO_t \times LC_k) + \sum_{k=1}^{4} \delta_{5k}(\Delta PM_t \times LC_k) + \varepsilon_{t+1}. \tag{2}$$

Table 5 also reports results from estimating Model 2. As in Model 1, life cycle indicator variables are included for the introduction, growth, shake-out, and decline stages, whereas the mature firms are captured through the intercept. *ΔATO* and *ΔPM* capture the mean effect of those variables on $\Delta RNOA_{t+1}$ for mature firms. The interaction terms model the incremental effect of the remaining life cycle stages on $\Delta RNOA_{t+1}$. However, similar to Model 1, Table 5 (Model 2) coefficients represent the total effect (the mature effect in the intercept plus the incremental effect for each life cycle stage) on $\Delta RNOA_{t+1}$. Reported tests of significance (t-statistics), however, pertain to whether mature stage coefficients are different from zero, or in the case of the other life cycle stages, whether coefficients are statistically different from those of mature stage firms.

As predicted, increases in *ATO* have the largest (and statistically significant) effect on future profitability for mature firms, and this effect is captured by the cash flow patterns (coefficient $= 0.028$, $p < 0.01$) and age (coefficient $= 0.022$, $p < 0.01$) classifications. Therefore, improving efficiency is more important for mature firms once the market is saturated. Contrary to predictions, increases in *PM* are not associated with increases in $\Delta RNOA_{t+1}$ for growth firms in any life cycle classification.[19] However, consistent with predictions, the negative and statistically significant relation between ΔPM and $\Delta RNOA_{t+1}$ documented in Penman and Zhang (2006) is concentrated in mature firms for both the cash flow pattern (coefficient $= -0.066$, $p = 0.038$) and AR (coefficient $= -0.060$, $p = 0.030$) classifications.

In light of the cash flow patterns' ability to explain expected economic outcomes, along with the parsimony of its computation, the cash flow patterns proxy provides a versatile life cycle measure. Age is also a parsimonious proxy, but the interpretation of future profitability based on age can be ambiguous. For example, while older firms likely intersect with maturity, age does not provide a distinct separation of introduction stage versus decline stage among young firms (Stinchcombe 1965; Jovanovic 1982; Freeman et al. 1983; Amit and Schoemaker 1993).

As a final sensitivity test, cash outflows for research and development are included in the Statement of Cash Flows as operating activities, but are more representative of investing cash flows. In an untabulated analysis, I re-estimate cash flow patterns with research and development reclassified as investing cash flows, finding no substantial change from the reported results. In summary, the cash flow patterns proxy is a robust classification for firm life cycle and is effective in explaining both the magnitude and persistence of future profitability relative to alternative classification methods.

IV. ROLE OF LIFE CYCLE IN PREDICTING FUTURE STOCK RETURNS

Previous sections demonstrate that cash flow patterns provide a reliable and parsimonious proxy for firm life cycle. Results thus far indicate that the highest level of profitability is attained (and persists) in maturity (Figure 1). However, investors could potentially undervalue mature firms if they do not fully recognize the valuation implications of life cycle (i.e., recognize the signal of the cash flow patterns at the financial statement date). If this potential undervaluation arises, then the mature signal should be positively associated with future excess returns.[20] This finding would indicate that the market inefficiently underestimates the persistence of RNOA in mature firms. On the other hand, if investors recognize the economic fundamentals of firm life cycle, and specifically the superior profitability of mature firms, this signal is impounded into price and future excess returns related to the mature signal will be indistinguishable from zero (i.e., the market is efficient with respect to the information contained in the life cycle signal).

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[19] Some economics research claims that the benefits of product differentiation techniques such as advertising and marketing are difficult to capture at the individual firm level because advertising partly serves to increase demand for the entire market (Oster 1990; Shy 1995), i.e., there is a free-rider effect. Additionally, gains in innovation are difficult to capture because of the mobility of labor among competing firms (Porter 1980; Jovanovic and Nyarko 1995). These factors could mitigate the ability of product differentiation efforts to result in persistent increases in profitability.

[20] Because the majority of firms are in the mature stage at any given point (41.18 percent of the sample), investing in firms with a mature signal is easily implementable.

I examine whether investors recognize the persistent profitability of mature stage firms by computing one-year-ahead buy-and-hold size- and book-to-market-adjusted returns.[21] I form portfolio returns based on both market capitalization decile and book-to-market decile (resulting in 100 portfolios returns) each month and subtract the appropriate portfolio return from a firm's raw monthly return to arrive at the excess return. I accumulate excess returns from the beginning of the fourth month of year $t+1$ through the third month of year $t+2$ following the life cycle stage signal at the end of year t. This procedure ensures that published financial statement data are available to investors prior to portfolio formation. Delisting returns are used whenever possible and delisted firms without a corresponding delisting return in the CRSP database are assumed to have a return of zero (Piotroski 2000) unless the delisting occurred for performance-related reasons, in which case the missing delisting return is set to −100 percent.[22]

I regress excess returns on indicator variables representing life cycle stage using a no-intercept model. A no-intercept model complicates the interpretation of R^2 (consequently I omit it from the results), but the advantage of the no-intercept specification is that it allows for a straight-forward interpretation of the significance of the coefficients.[23] Table 6 reports results from estimating the regression with reported standard errors robust to clustering by firm and year (Gow et al. 2010). Reported tests of significance are two-tailed.

Mature firms earn positive and significant ($p < 0.01$) annual excess returns of 1.6 percent indicating that investors do not fully appreciate the persistent profitability of the mature life cycle stage, although the magnitude of the excess return is small. While *ex ante* predictions about the other life cycle stages are not hypothesized, the evidence shows that on average, introduction and growth firms earn significantly negative excess returns in the year following the cash flow pattern signal (−4.8 percent and −1.2 percent, respectively; $p < 0.01$ and $p = 0.015$, respectively). Counter to intuition, decline stage firms earn one-year-ahead positive excess returns of 13.5 percent ($p < 0.01$). However, this result should be interpreted with caution. By construction, 12 months of return data are necessary from the fourth month of year $t+1$ through the third month of year $t+2$. This specification imparts a survivorship bias in that only decline firms that survive for at least 15 months subsequent to the cash flow pattern signal are included in the sample. In untabulated results, the regression was repeated using contemporaneous excess returns as the dependent variable. As expected, mean annual excess returns for decline stage firms are −7.8 percent ($p < 0.01$), which is consistent with the market expecting these firms, on average, to underperform in the future.

Overall results suggest that investors do not fully recognize the fundamental life cycle information embodied by the cash flow pattern signal with respect to future excess returns. Further, a profitable and relatively low-risk trading strategy is possible by forming a long buy-and-hold portfolio of mature stage firms. Therefore, cash flow patterns represent a parsimonious and implementable tool to identify stocks that are, at least temporarily, mispriced.

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[21] The results are invariant to replacing size- and book-to-market-adjusted returns with size-adjusted returns or market-adjusted returns.

[22] Prior research has used −30 percent for NYSE and AMEX firms (Shumway 1997; Mohanram 2005) and −55 percent for NASDAQ firms (Shumway and Warther 1999) that are delisted for performance. Sloan (1996) uses −100 percent for performance-related delistings. Because missing delisting returns for mergers are likely to be understated when setting to zero, I make no upward correction for merger-related missing returns to bias against finding results.

[23] If using an intercept, then one of the life cycle stage indicators would be omitted and the omitted stage's mean effect would be captured in the intercept. In this case, the remaining coefficients and t-statistics would reflect the incremental effect of each of the remaining life cycle stage compared to the reference group (the omitted indicator variable). Alternatively, a no-intercept model captures the mean effect of each of the five life cycle stages on annual excess returns individually and significance is computed on whether each coefficient differs from zero. However, when the intercept is omitted from the model, R^2 is no longer a proportion of the variation explained (Greene 2007).

TABLE 6

Regression of One-Year-Ahead Buy-and-Hold Annual Excess Returns on Life Cycle Stage

(t-statistics in parentheses)

(n = 44,838)

Variable	Predicted Sign	Coefficient (t-statistic)
Introduction	+/−	**−0.048**
		(−4.35)
Growth	+/−	**−0.012**
		(−2.44)
Mature	+	**0.016**
		(3.88)
Shake-Out	+/−	**0.025**
		(2.12)
Decline	+/−	**0.135**
		(5.47)

The sample period is from 1989 to 2005.

Coefficients that are significant at $p < 0.05$ (two-tailed) are in bold. All t-statistics in parentheses are adjusted for clustering by firm and year (Gow et al. 2010).

One-year-ahead buy-and-hold annual excess returns are regressed on life cycle stage measured by cash flow patterns. Introduction, growth, mature, shake-out, and decline are indicator variables set to 1 when the observation is in that category at the end of the current year, and 0 otherwise. A no-intercept model is used so that each life cycle stage is interpreted as excess returns that are significantly different from zero (two-tailed).

The sample size is reduced in size compared to previous tests because one-year-ahead stock returns were utilized in this specification.

Excess returns for each firm are computed as the firm's buy-and-hold annual return minus the buy-and-hold annual return of an equally weighted benchmark portfolio matched on size and book-to-market deciles. Returns are accumulated from the beginning of the fourth month of year $t+1$ through the third month of year $t+2$. Delisting returns are used when included in the CRSP database. Delisted firms without a corresponding delisting return are assumed to have a return of −100 percent in the delisting period when delisted for performance-related reasons (delisting codes between 200 and 299), 0 percent otherwise (Sloan 1996; Piotroski 2000).

V. SUMMARY AND CONCLUSION

This study develops and validates an effective and parsimonious proxy for firm life cycle using cash flow patterns. Several performance measures and firm characteristics such as profitability, size, and age are nonlinearly related to firm life cycle. For that reason, monotonic sorts on those measures to determine life cycle stage result in misclassification. More importantly, a simple sort on univariate measures makes a distributional assumption of uniformity that is not supported by economic theory.

To explore cash flow patterns as a proxy for firm life cycle, I first investigated whether the proxy was consistent with extant economic theory. Next I examined how cash flow patterns capture the economic concept of life cycle relative to proxies used in past research (i.e., Anthony and Ramesh's [1992] classification and firm age quintiles). The cash flow measure explains varying persistence among firms, such that patterns of mean-reversion of future profitability differ by life cycle stage. Specifically, the spread in RNOA is 3 to 10 percent between mature and decline firms five years subsequent to portfolio formation (where portfolios are formed according to cash flow pattern signal). This spread of 7 percent is economically significant, given that median RNOA for the sample period is just over 8 percent. The valuation and forecasting implications of the study are that growth rates and forecast horizons should be conditioned on firms' current life cycle stage.

Additionally, past research on the decomposition of RNOA has shown that change in asset turnover is an important driver of future changes in RNOA (Fairfield and Yohn 2001), but that improvements in future profitability due to increases in profit margin are not sustainable (Penman and Zhang 2006). As predicted, both results are primarily concentrated in mature firms. Increases in operational efficiency are critical for mature firms due to increased competition that is attracted to the product market by superior profits. At the same time, diminishing returns to product differentiation efforts are evident among these same firms.

Finally, I investigate the market valuation consequences of life cycle stage (as captured by cash flow patterns) finding that positive future excess returns are earned for mature firms. This finding indicates that the market does not efficiently use life cycle information contained in the Statement of Cash Flows, although the inefficiency is small. Consequently, investors can exploit the empirical regularities encompassed in the data to engage in an implementable trading strategy based on firm life cycle stage.

In summary, this study uses basic accounting information to capture the construct of firm life cycle. Life cycle information (using the cash flow pattern proxy) allows investors, creditors, auditors, analysts, regulators, and researchers to investigate and control for differences in resources, rates of investment, obsolescence rates, learning and experience curves, adaptation, product-differentiation, and production efficiencies in a parsimonious measure. The cash flow pattern proxy outperforms other life cycle proxies from the literature (including age), and better explains future profitability (both in rates of return and stock returns).

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APPENDIX A

VARIABLE DEFINITIONS

Profitability variables are defined as in Nissim and Penman (2001) and are presented in alphabetical order:

Asset Turnover (*ATO*) = Net Sales (Compustat #12)/Average Net Operating Assets (*NOA*);

Common Equity (*CSE*) = Total Common Equity (Compustat #60) plus Preferred Treasury Stock (Compustat #227) minus Preferred Dividends in Arrears (Compustat #242);

Comprehensive Net Income (*CNI*) = Net Income (loss) (Compustat #172) minus Preferred Dividends (Compustat #19) plus the change in the Marketable Securities Adjustment (Δ in Compustat #238) plus the change in the Cumulative Translation Adjustment in Retained Earnings (Δ in Compustat #230);

Financial Assets (*FA*) = Cash and Short-Term Investments (Compustat #1) plus Long-Term Receivables, Investments and Advances to Affiliated Companies (Compustat #32);

Financial Obligations (*FO*) = Debt in Current Liabilities (Compustat #34) plus Total Long-Term Debt (Compustat #9) plus Preferred Stock (Compustat #130) minus Preferred Treasury Stock (Compustat #227) plus Preferred Dividends in Arrears (Compustat #242);

Growth in NOA (*GrNOA*) = (Net Operating Assets [*NOA*]/Lagged Net Operating Assets [*NOA*]) minus 1;

Leverage (*LEV*) = Net Financial Obligation (*NFO*)/Common Equity (*CSE*);

Marginal Tax Rate = applicable highest federal tax rate + 0.02 to approximate state taxes. This definition is taken from Nissim and Penman (2001). The federal tax rates applicable to this sample are 34 percent for years 1989–1992 and 35% for 1993–2005;

Net Financial Expense (*NFE*) = (Interest Expense [Compustat #15] * [1 minus the Marginal Tax Rate]) plus Preferred Dividends (Compustat #19) minus (Interest Income [Compustat #62] * [1 minus the Marginal Tax Rate]) plus lagged Marketable Securities Adjustment (Compustat #238) minus Current Marketable Securities Adjustment (Compustat #238);

Net Financial Obligation (*NFO*) = Financial Obligations (*FO*) minus Financial Assets (*FA*);

Net Operating Assets (*NOA*) = Net Financial Obligation (*NFO*) plus Common Equity (*CSE*) plus Minority Interest (Compustat #38). This definition is used rather than the more common expression Operating Assets (*OA*) minus Operating Liabilities (*OL*) to be consistent with prior research and due to incomplete data in the Compustat variables related to operating liabilities;

Operating Assets (*OA*) = Total Assets (Compustat #6) minus Financial Assets (*FA*);

Operating Income (*OI*) = Comprehensive Net Income (*CNI*) plus Net Financial Expense (*NFE*);

Operating Liabilities (*OL*) = Operating Assets (*OA*) minus Net Operating Assets (*NOA*);

Profit Margin (*PM*) = Operating Income (*OI*)/Net Sales (Compustat #12); and

Return on Net Operating Assets (*RNOA*) = Operating Income (*OI*)/Average Net Operating Assets (*NOA*).

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Overpriced Shares, Ill-Advised Acquisitions, and Goodwill Impairment

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ABSTRACT: We establish that the root cause of many goodwill write-offs is the buyers' overpriced shares at acquisition. Overpriced shares provide managers with strong incentives to exploit the overpricing by acquiring businesses, often paying more than the acquisition's synergies, setting the stage for subsequent goodwill write-offs. In particular, we document the following patterns: (1) Share overpricing is strongly and positively associated with the intensity of corporate acquisitions and the growth of accounting goodwill. (2) Share overpricing predicts goodwill write-offs and their magnitude. (3) Acquisitions by overpriced companies—a strategy often recommended by investment bankers and some academics—are often ill-advised (overpaid for and/or strategic misfit), exacerbating the post-acquisition negative returns of buyers beyond the reversal of the overpricing. Thus, managers' arguments notwithstanding, goodwill write-off is an important event highlighting a dysfunctional investment strategy.

Keywords: *goodwill write-off; overpriced shares; acquisitions.*

Data Availability: *Data are available from sources identified in the paper.*

I. INTRODUCTION

Pictures speak louder than words: Figure 1 presents eBay's cumulative stock return against the S&P 500 index from 2003. In mid-September 2005 (see left arrow), eBay acquired the Internet phone company Skype for $2.6 billion, paid in part by stock. At the time of acquisition, eBay's stock advanced over twice the S&P 500, and with the benefit of

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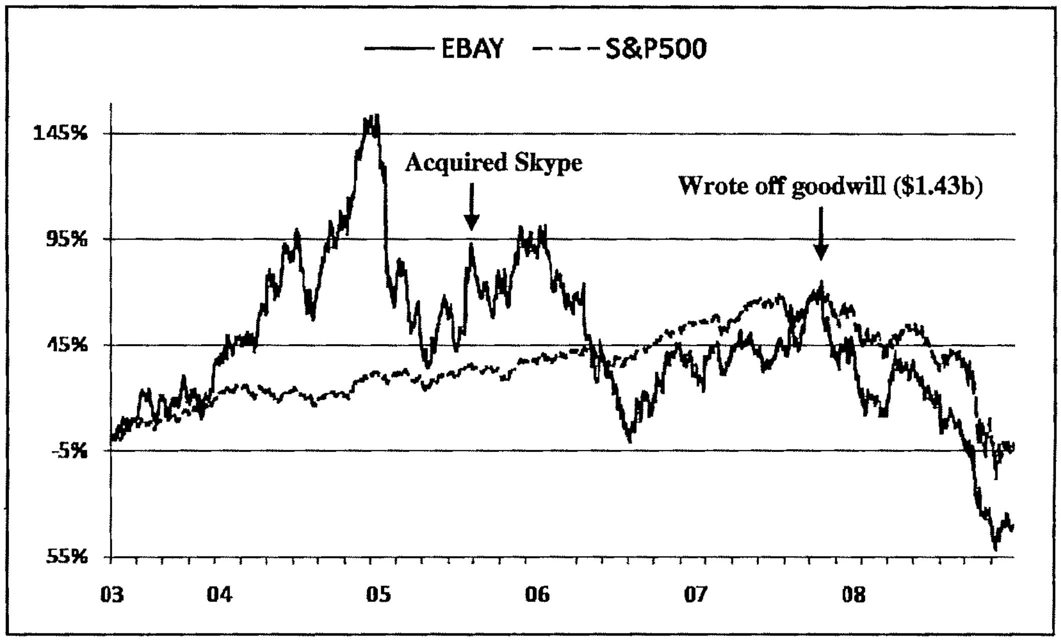
FIGURE 1
eBay versus S&P 500: The Skype Acquisition
Cumulative Stock Returns



hindsight—eBay's steep stock price decline in 2006 and its stagnation thereafter—its shares seem to have been substantially *overpriced* at the time of the Skype acquisition. Things soon turned ugly for the online auctioneer, and on October 1, 2007 (right arrow), it announced a massive goodwill write-off of $1.43 billion (55 percent of the acquisition price) related to the Skype acquisition. Meg Whitman, eBay's highly respected CEO, retired soon thereafter, in January 2008, and commentators attributed this in part to the Skype debacle.[1]

In this study, we argue and corroborate empirically that eBay's chain of events—from overpriced shares through stock-financed acquisitions and, ultimately, to substantial goodwill write-offs—is, in fact, a general phenomenon. Using a sample of acquisitions during 1990–2006, we first document a strong and monotonically positive relation between the share overpricing of the bidding (acquiring) companies and the amount of goodwill from these acquisitions. We then show a monotonically positive association between the bidders' overpricing and goodwill write-offs (impairment) following the acquisitions. Cementing the relation between share overpricing and goodwill write-offs, we find that the frequency of shareholder lawsuits alleging fraud and misleading information about acquisitions, which are often filed promptly after a goodwill write-off announcement, is strongly related to the bidders' overpricing. We measure share overpricing by three indicators of overvaluation: the industry-adjusted price-to-earnings ratio, discretionary accruals, and prior equity issuance, and combine these indicators into an aggregate index of share overvaluation. This study thereby traces the antecedents of goodwill impairment—an important and increasing phenomenon—to acquisitions with overpriced shares.[2]

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[1] In September 2009, eBay sold 65 percent of Skype to private investors.

We note that our findings are not automatic outcomes of acquisitions with overpriced shares. While overpriced bidders may acquire overvalued targets, which often leads to certain goodwill, the amount and prevalence of such goodwill are constrained by various important factors. First and foremost, as Shleifer and Vishny (2003) argue, the acquisition price (and consequent goodwill) must be lower than the merger synergies. The perceived synergies, therefore, are an upper bound on the goodwill of the acquisition. Second, other factors, such as the bidder's relative bargaining power and incentives-to-sell given to target managers (elaborated below), also reduce the purchase price and the consequent goodwill. Thus, while bidder overpricing may lead to certain goodwill, its extent and prevalence can be determined only by empirical analysis. This is even more pronounced regarding our second link: acquisition with overpriced shares and goodwill write-offs. Indeed, if acquiring managers behave rationally, according to the Shleifer and Vishny (2003) model, and constrain the acquisition price by the acquisition synergies, there will be no goodwill write-offs. That is, the future cash flows or cost savings from the merger would exceed the acquisition price, thereby obviating goodwill impairment. Accordingly, our empirical findings are not mechanical outcomes of acquisitions with overpriced shares.

Providing further insight into the link between overpriced bidder shares and goodwill write-offs, we document that weak corporate governance enhances the association between share overpricing on one hand, and acquisition intensity and the consequent goodwill write-offs on the other. Apparently, effective directors check managers' urge to use overpriced shares to acquire companies in order to justify and prolong the overpricing. Many such acquisitions are overvalued and strategically incompatible with the bidders.

We then turn to an important, yet unresearched, issue concerning the economic implications of goodwill write-offs. Academics and practitioners often argue that when a firm's shares are overpriced, it is beneficial to current shareholders to acquire businesses, and even overpay for them, as long as such overpayment is lower than the bidder's share overpricing. It is argued that such acquisitions are beneficial in the long term, moderating the negative bidder returns due to the correction of the overpricing (see next section for elaboration). Following this logic, a subsequent goodwill write-off does not reflect negatively on the acquisition decision; rather, it is an expected consequence of an overpayment for the target with even more overpriced shares. A goodwill write-off is accordingly a non-event—just an accounting routine. We show that this is not the case. Corporate acquisitions with overpriced shares—many leading to goodwill write-offs—exacerbate the post-acquisition negative returns beyond the overpricing correction. Goodwill write-offs are, accordingly, an important business event signaling a flawed investment strategy.

Our main contribution to the accounting literature is to trace goodwill write-offs, a frequent and growing phenomenon, all the way back to their root cause: the incentives of managers of overvalued firms to acquire businesses, whether to exploit the overpricing for shareholders' benefit or to justify and prolong the overpricing by maintaining the façade of growth. In contrast, most extant studies on goodwill impairment focus on events surrounding the write-off, such as investors' reaction to the write-off announcement (it is generally negative [Li et al. 2005]), whether goodwill write-offs are timely or delayed by managers (they are delayed [Hayn and Hughes 2006; Francis et al. 1996]), whether write-offs improve financial information (they do; write-offs predict future cash flows and earnings [Anantharaman 2007]), and the managerial incentives affecting the write-offs (goodwill impairment is related to characteristics of debt contracts, managerial bonuses, and exchange delisting regulations [Beatty and Weber 2006]).[3] While these findings are informative, the root causes of goodwill impairment—the circumstances under which ill-advised acquisitions are being made—have not been comprehensively investigated in the literature.

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[2] The number of firms reporting goodwill write-offs between 2004 and 2008 are 447, 480, 475, 533, and 1,283, respectively. The median ratios of goodwill write-off to equity over those years are 5.5 percent, 6.8 percent, 4.7 percent, 6.9 percent, and 15.2 percent, respectively.

We further contribute to the accounting literature by investigating the economic implications of a goodwill write-off. Is it a benign event, merely reflecting the target's overvaluation—a frequent occurrence when overpriced shares are used as payment—or is goodwill write-off an important indication of a flawed investment strategy? We corroborate the latter, consistent with investors' negative reaction to write-off announcements and the frequent shareholder lawsuits following goodwill write-offs.

At a practical level, our findings are relevant to auditors and regulatory agencies concerned with the timely recognition of goodwill impairment.[4] Goodwill must be annually tested for impairment, but such tests are notoriously difficult. Unless the target's shares continue to be publicly traded—a minority of acquisitions—there is no objective evidence of impairment. We document below that bidders' overpriced shares at the time of acquisition predict goodwill write-offs (along with other variables, such as the percentage acquisition price paid in shares and the target being a foreign enterprise), thus providing auditors and regulators with an early-warning signal for a high likelihood of goodwill impairment.

Section II elaborates on mispriced shares, especially those that are overpriced, and outlines our research questions. Section III presents the data, summary statistics, and our research methodology. Section IV presents our empirical findings. Section V establishes that share overpricing predicts goodwill write-offs, and Section VI presents various robustness checks. Section VII concludes the paper.

II. RESEARCH QUESTIONS

In forming our research questions, we begin with the well-known Shleifer and Vishny (2003) (hereafter, SV) model of corporate acquisitions based on investors' misvaluations of the merger partners. SV's underlying assumption is that:

> financial markets are inefficient, so some firms are valued incorrectly. In contrast, managers are completely rational, understand stock market inefficiencies, and take advantage of them, in part through merger decisions. Mergers in this model are a form of arbitrage by rational managers operating in inefficient markets. (SV, 296)

Managers in SV's model are endowed with considerable information. They are aware of the mispricing of both bidder (buyer) and target (seller) firms. They also know the synergies from combining the merger partners and the long-run valuation of the combined entity. A major implication (prescription) of SV's model is that bidder managers use their overpriced shares to acquire target companies, and that bidder shareholders gain as long as the price paid for the acquired entity is lower than the perceived synergies (savings) from the merger. When bidders acquire firms for less than the perceived synergies from acquisition, even if the target is overvalued

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[3] Note that these managerial incentives relate to the write-off decision, unlike ours, which focus on the acquisition decision. Several studies focus on the target overpayment at acquisition. Li et al. (2005) document that write-offs are more likely in overpayment of target cases (different from the overvaluation of bidders, which we investigate) and when the post-acquisition returns of buyers are negative. Hayn and Hughes (2006) predict write-offs from the acquisition premium and other variables.

[4] Recall the evidence that managers often delay the recognition of goodwill impairment.

(but less overvalued than the bidder), then bidders' shareholders benefit in the long term, since the post-acquisition negative returns from the correction of the overvaluation will be smaller than they would have been without the acquisition:

> [S]tock acquisitions are used specifically by overvalued bidders who expect to see negative long-run returns on their shares [the correction of the overvaluation], but are attempting to make these returns less negative.[5] (SV, 306)

Why would bidder managers use overpriced shares primarily for acquisitions rather than issue the overvalued equity for other purposes, perhaps for organic growth or cash hoarding? To be sure, not all managers of overpriced companies engage in acquisitions. Some use the overpriced shares to finance organic (internal) growth, as shown by Polk and Sapienza (2009), while some may just do nothing with the overpriced shares. But the incentive to acquire companies with overpriced shares is strong:

> The advantage of making acquisitions, aside from positive perceived synergies, is that they contribute to the growth in earnings of the firm, and thereby help justify the high valuations. As the policies of Cisco and other technology firms illustrate, acquisitions become part of a growth strategy justifying high market multiples in a way that cash accumulation cannot. For this reason as well, it might be better to use overvalued equity *to buy other overvalued firms* than to invest in cash. (SV, 303; emphasis added)

Thus, the advantage of a merger over organic growth or investing in cash (and over doing nothing) is that it immediately boosts both the top and bottom lines—revenues and earnings—thereby justifying the continuation of bidder overvaluation, whereas internal growth (capital expenditures) takes time to bear fruit and cash investments yield, at most, a modest interest. Acquisitions with overpriced shares also have the advantage of reducing the negative impact of a new equity issuance on bidder share price because, as shown by Baker et al. (2007), in a stock acquisition, most of the target shareholders become new shareholders of the bidder as they follow the "path of least resistance" to passively accept and hold the acquirer's shares, even when they would not have bought the same shares from a seasoned equity offer. Shareholders' decision to follow the "path of least resistance" can also be motivated by tax considerations.

Certain aspects of the SV model are supported by a comprehensive study on acquisitions (Dong et al. 2006), documenting the following patterns. First, high valuation (presumably overpriced) bidders are much more likely to use stock rather than cash for acquisitions. Second, bidders have significantly higher market valuations than targets. Third, high target valuations (presumably overpriced) are associated with stock rather than cash offers. Fourth, "[t]argets with higher valuations are less likely to be hostile to the bid, and are more likely to be acquired and to receive merger bids [stock] rather than tender offers [cash]" (Dong et al. 2006, 729). Dong et al.'s (2006) estimates confirm that acquisition targets are, on average, overvalued.

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[5] This poses an intriguing question. Why would the target's shareholders accept the bidder's overpriced shares? SV offer two answers. First, target shareholders receive a premium over their shares' (sometimes inflated) value, and gain as long as they sell the bidder's shares before the overpricing is completely corrected. Second, the bidder pays (bribes) the target managers, whose consent is generally crucial to the acquisition, by keeping these managers in top positions in the merged company, or giving them generous severance pay, or accelerating the exercise of their stock options (particularly lucrative if the target is overvalued). A striking confirmation of the last point comes from a recent study showing that numerous companies have awarded stock options to their top executives while engaged in negotiations to be acquired. The average CEO received an extra $5.7 million from such grants. When the deal closed, the executives cashed out these options (Fich et al. 2010).

This leaves open the main postulate of the SV model that the price paid for the target is expected to be lower than the perceived synergy. Stated differently, bidder managers act in the long-term interests of shareholders.[6] Indeed, several well-known corporate acquisition models depart from this assumption. Stein (1996), for example, advances a model in which managers cater to the *short-term* interests of shareholders. To boost short-term share prices, or at least keep them from falling, managers will invest in acquisitions, some of which are ill-advised—negative net-present-value projects—in order to boost reported revenues and earnings, while detracting from the long-term growth of the firm. Polk and Sapienza (2009) provide empirical support for this scenario.[7] Earnings management, particularly by "real means"—such as cutting R&D, postponing advertising, or delaying IT systems updates, on which there is extensive evidence—is similarly aimed at such short-term justification of overpriced shares (Jensen 2005).

SV's assumption of managers' information omnipotence—they know the mispricing of the merger partners, as well as the merger synergies—is also questionable. Estimating mispricing and, particularly, assessing *ex ante* merger synergies is highly uncertain and prone to serious mistakes. In fact, Roll (1986) bases his theory of mergers on the assumption that managers err in assessing the value of the target and the merger synergies (leading to "hubris," where the bidder with the largest overvaluation of the target gets the deal and incurs the "winner's curse"). Lehn and Zhao (2006) provide intriguing evidence consistent with many managers substantially overestimating the target (hubris). They document that "[o]f the 714 CEOs who affected the sample acquisitions, 407, or 57 percent of the sample, were replaced following the acquisitions in what we classify as 'disciplinary CEO turnover'" (Lehn and Zhao 2006, 1761).

Various models supported by evidence thus depart from SV's rational managerial acquisition behavior. To the extent that bidders with overpriced shares overestimate the benefits from acquisitions in their zeal to soften the inevitable correction of the overpricing, or to cater to short-term investors (Stein 1996), the acquisition's goodwill will have to be subsequently written-off, and the long-term returns to bidder shareholders will be worse than without the acquisitions.[8] Thus, the SV acquisition model and related models based on different assumptions raise intriguing questions regarding the consequences of acquisitions with overpriced shares and, particularly, its effect on goodwill write-offs. In particular:

Acquisition with Overpriced Shares and Goodwill

The SV model predicts that some acquisition targets will be overvalued, as long as such overvaluation is not larger than the bidder's overvaluation. Target overvaluation implies the recording of accounting goodwill with the acquisition. Recall, however, that the main acquisition condition of the SV model is that for acquisitions paid in stock, the acquisition price (P)—a major determinant of goodwill—is lower than the perceived acquisition synergies (S).[9] There is, therefore, a strict upper bound in the SV model on goodwill: $P < S$. Managers will not pay exorbitant prices for targets, since the price is constrained by the synergies, restricting, in turn, the values of goodwill. In fact, the SV model implies that regardless of the extent of share overpricing, rational bidders will *minimize* acquisition price in order to maximize the gains from acquisition (SV, 301). This incentive further restricts the value of goodwill.

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[6] "Using overvalued shares as a means of payment enhances the claim on capital of the bidding shareholders, and thereby cushions the collapse of the shares in the long run" (SV, 301).

[7] "Our main interpretation of the results is consistent with Stein's (1996) hypothesis that short-horizon managers temporarily distort the firm's investment decision and therefore misallocate resources" (Polk and Sapienza 2009, 27).

[8] Other studies on the relation between valuation and merger include Rhodes-Kropf and Viswanathan (2004), who develop a model to explain how merger waves occur under different conditions of valuation, and Rhodes-Kropf et al. (2005), who empirically test the model's prediction that misvaluation drives merger. While Rhodes-Kropf et al. (2005) find that bidders have higher market-to-book than targets (similar to Dong et al. 2006), they show that the difference is only true for the short-term mispricing. The long-run mispricing follows the opposite pattern: bidders have lower long-run market-to-book ratio than targets.

[9] The SV model allows cases where $P > S$, yet such acquisitions are not expected if acquirers want to maximize shareholder value.

In addition to the acquisition price being bounded by the perceived synergies, there are, according to SV, various other factors affecting the price: (1) The bidder's bargaining power relative to the target (a large pharmaceutical company relative to a small biotech firm)—the larger the bidder's relative bargaining power, the lower will be the price; (2) "incentives" given to target managers (continuing employment by the merged unit, accelerating their stock options) motivating them to agree to a lower purchase price; (3) target managers' incentives to sell the company (managers nearing retirement will be particularly eager to "cash out" by an acquisition, given the large premia paid, rather than wait for uncertain growth)—the larger the incentive to sell, the lower the acquisition price. There are, thus, various factors, in addition to the merger synergies, that will lower the acquisition price and the consequent goodwill.[10]

Accordingly, while share overpricing leads to some acquisitions of overvalued targets, which in turn, generates goodwill, the extent of such goodwill and its prevalence are open questions, given the multiple factors that restrict the acquisition price and the consequent goodwill. The extent of the relation between bidders' overpricing and goodwill is, thus, our first research question.

Acquisition with Overpriced Shares and Goodwill Write-Offs

While a certain amount of goodwill can be expected from acquisition of overpriced targets, goodwill *write-offs* cannot be automatically expected. The reason is that if the acquisition price is lower than the perceived merger synergies—future cash flows, or cost savings from the merger—goodwill will not be impaired and there will be no goodwill write-off. Thus, if managers maximize long-term shareholder value by paying less than the synergies, as SV assume, the acquisition's cash flows (synergies) will exceed the acquisition price, and there will be *no* goodwill write-off. Only in cases of gross overestimation of the synergies, or overpayment relative to synergies, will there be a write-off.

This reasoning is corroborated by a recent KPMG report stating: "Regarding goodwill, misjudgment with respect to estimated synergies and projected growth rates may lead to significant impairment risk ... Acquirers that expect a high going-concern valuation and synergies at the time of acquisition may pay a higher control premium" (KPMG 2010, 11). And a recent *Wall Street Journal* (2010) online article quotes Sigma Pharmaceuticals, which wrote off goodwill to the tune of \$375 million, as conceding that "the synergies expected from the merger between Arrow and Sigma back in 2005 had not been achieved." Thus, goodwill write-off is not an automatic by-product of large goodwill, but rather results from a misvaluation of expected synergies or unexpected decline in synergies. Indeed, a large number of well-run firms, such as IBM, General Electric, and General Dynamics, have billions of dollars of goodwill without any write-offs (at least during 1995–2008).[11]

Goodwill write-offs will also occur when managers depart from the SV assumptions. Models like Stein's (1996) and Roll's (1986), as mentioned above, depart from the long-term maximization assumption of SV, and admit to cases where the present value of the acquisition's long-term cash flows are lower than the price paid, either because of a short-term focus (Stein 1996) or overestimating the synergies (Roll 1986). In such cases, there will obviously be a goodwill write-off.

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[10] In untabulated analysis, we confirm that these factors are indeed negatively related to goodwill.

[11] General Dynamics, for example, during 1995–2008, had more than 50 acquisitions, increasing its goodwill to 40 percent of total assets in 2008, yet did not have any goodwill write-offs.

Hence, the relation between acquisition with overpriced shares and goodwill write-offs depends on whether managers can reliably estimate the acquisition synergies and pay less than the synergies (SV), or whether managers pursue short-term targets (Stein 1996) or systematically misvalue the synergies (Roll 1986). This relation is obviously an important empirical question, which we address below.

The Economic Implications of Goodwill Write-Offs

The overpriced shares used in acquisition will, sooner or later, revert to intrinsic value, leading to negative post-acquisition returns for bidders. The extent of such price reversal, however, is also an empirical question, as it depends on whether the bidder manager acts in the long-term interests of shareholders (SV) or pursues other objectives (Stein 1996). If bidders follow the long-term maximization assumption of SV by paying less than the expected synergies, the post-acquisition negative returns from the correction of the initial share overvaluation will be smaller than they would have been without the acquisition (SV, 306). However, in cases of overestimating synergies and/or overpayment for synergies, the negative subsequent returns will be worse (larger) than without acquisition, indicating the ill-advised nature of the acquisition. Thus, there is a sharp difference of opinion about acquisition consequences.

Examining the extent of the post-acquisition price reversal is particularly relevant for understanding the economic implications of goodwill write-offs. Managers tend to portray these write-offs as just a byproduct of the expected price reversal when overpriced shares are used to acquire overvalued targets. They often argue that such goodwill impairments have no economic implications, since they just reflect the lower valuations of the previously overvalued shares used to acquire overvalued targets. Thus, argue the managers, goodwill write-offs simply reflect the reversal of the overvaluation, not the substance of the acquisition. In the words of the CFO of JDS Uniphase, after writing off $44.8 billion of goodwill: "Had these [acquisition] transactions been done at different times when valuations were lower ... the goodwill amounts will have been considerably smaller [and so would be the write-off]" (Pender 2001). Managers also often highlight the non-cash nature of the goodwill write-off to further imply that the write-off is just a benign accounting ritual with no real economic substance.

So, is goodwill write-off a prominent accounting procedure, increasing in frequency, a non-event, or does it signify an ill-advised acquisition strategy? This question can be answered by examining whether the post-acquisition stock returns of overvalued bidders were improved by the acquisition, or worsened, in the presence of goodwill write-off? This is an empirical and obviously important question to accountants and investors, which we address below.

We would like to note that none of the above research questions—the relation between acquisitions with overpriced shares and goodwill, that between acquisitions and write-offs, and the economic implications of write-offs—were examined before. Nor are the answers to these questions mechanically derived from previous research that essentially shows that overvalued bidders tend to acquire overvalued targets. In particular, as SV postulate, the fact that a target is overvalued does not imply that goodwill will be written off, as long as the price paid is lower than the perceived acquisition synergies.

III. DATA, METHODOLOGY, AND SUMMARY STATISTICS

We obtained our sample from the SDC database on mergers and acquisitions. The initial sample consists of all U.S. publicly traded firms that undertook mergers and acquisitions between 1990 and 2006. We include acquisitions of both U.S. and foreign enterprises, as well as acquisitions of public and private targets. We exclude all observations for which (1) the value of the transaction is not disclosed, (2) the percentage of shares acquired in the transaction is less than 90 percent, (3) the value of the transaction is more than 100 percent or less than 1 percent of the acquiring firm's market value, or (4) the pooling method was used. We also require that sample firms have accounting data in Compustat and stock price and return data in CRSP. The total sample includes 54,218 yearly observations, and the bidder subsample is comprised of 7,055 observations.

Measuring Share Overpricing

We use the following three indicators to identify overpriced shares: the industry-adjusted price-to-earnings (P/E) ratio, the amount of discretionary accruals, and prior equity issuance. As there, obviously, is no unique *ex ante* perfect measure of share mispricing, we use three proxies to indicate this phenomenon, and blend them into an index reflecting the incremental information conveyed by the individual proxies. Prior studies (Baker and Wurgler 2006; Polk and Sapienza 2009) similarly use mispricing proxies, or construct indices from such proxies, to indicate mispricing.

Our motivations for using the specific proxies are as follows: (1) *The industry-adjusted price-to-earnings (P/E) ratio* is by far the most widespread mispricing proxy used by investors.[12] The industry-adjusted P/E ratio we use is the difference between the firm's P/E and the corresponding four-digit SIC industry median P/E. To ensure that the industry median P/E ratio is representative, we exclude from it firms with negative P/Es and those with P/E ratios greater than 100. (2) *Discretionary accruals* were found by Sloan (1996) to indicate mispricing because returns on shares of high accruals companies reverse during the two to three years subsequent to the high accruals. Following Chan et al. (2006) and Polk and Sapienza (2009), we define discretionary accruals as the difference between the firm's total accruals and "normal accruals," deflated by average total assets. Total accruals are measured as the difference between earnings before extraordinary items and cash from operations. Normal accruals are the product of the firm's current sales times the ratio of the sum of total accruals, divided by the sum of sales over the prior five years (year t–5 to year t–1). (3) *Net equity issues* proxy for overpricing because evidence indicates that equity issues predict subsequent low stock returns (Daniel and Titman 2006); that is, the firm's shares are overvalued around the time of issue. Following Daniel and Titman (2006), equity issuance is measured as the difference between the log of the ratio of the firm's market value at year t to its market value at year t–5, and the log of the firm's stock return from year t–5 to year t.

Because no single mispricing proxy fully captures the phenomenon, we construct mispricing indicators that blend the three individual proxies and reflect the incremental information in them. To construct these composite indicators, we perform a principal component analysis using—for maximum representativeness—all available firms, not just corporate buyers, with the required accounting and stock return data. To enhance our estimation of share overpricing, we use the first two principal components which, combined, account for 68.9 percent of the sample variance of the underlying overpricing proxies. In our following tests and regression analyses, we use these two principal components as the firm-specific indicators of share mispricing (termed *OVE1* and *OVE2*, respectively).

Some of our tests below are based on a 5 × 5 classification of the sample firms into quintiles of the first (*OVE1*) and the second (*OVE2*) principal components of the overpricing proxies. In these tests, we focus on the main diagonal of the 5 × 5 table, namely, the intersection of firms with the lowest quintile of the *OVE1* and *OVE2* indicators (least overvalued firms), followed by the intersection of firms with the second-lowest quintile *OVE1* and *OVE2*,..., ending with the fifth group—the intersection of the firms with the highest quintile of *OVE1* and *OVE2* indicators (most overpriced firms). We perform this main diagonal classification of firms for every sample year from 1990 to 2006.

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[12] In their study of share overpricing and corporate acquisitions, Dong et al. (2006) use a highly correlated, but somewhat less frequently used, measure: the price-to-book ratio.

To demonstrate the efficacy of our mispricing proxies and composite indicators, we compute abnormal returns for the three years following the mispricing computation (that is, three years following each sample year, 1990–2006). If our proxies indeed capture share mispricing, then the subsequent returns should reverse as investors realize the mispricing, with positive subsequent returns for underpriced shares and negative returns for overpriced shares. The subsequent abnormal returns are computed following Hirshleifer et al.'s (2004) computation of hedge portfolio abnormal returns (both equally weighted and value-weighted).[13] Table 1 reports these abnormal returns during the three years following the mispricing classification. The columns of Table 1 document the subsequent returns along the main diagonal of the 5 × 5 firm classification, from the least overpriced firms (Lowest-Lowest portfolio) to the most overpriced (Highest-Highest portfolio).

It is evident that the subsequent returns are monotonically decreasing. For year t+1 (equally weighted), for example, the returns are 0.0018, −0.0029, −0.0031, −0.0043, and −0.0100, respectively. The same return pattern is evident for years t+2 and t+3, and for the value-weighted returns. Notably, most of the portfolio returns are statistically significant. The systematic pattern of the returns in Table 1—positive for underpriced (Lowest-Lowest portfolio) and increasingly negative for overpriced shares—demonstrates the ability of our three proxies (combined in the indicators *OVE1* and *OVE2*) to capture share mispricing. The monthly hedge portfolio returns, reported in the last four lines of Table 1, are positive and substantial, reflecting the gains of a strategy of going long on the underpriced shares and shorting the overpriced shares. As also reported in the bottom of Table 1, we see similar results when measuring trading gains by CAPM, the Fama-French three-factor model, and the Carhart (1997) four-factor model.[14]

Measuring Acquisition Intensity

From identifying share overpricing, we move to the measurement of acquisition intensity. We measure the intensity of corporate acquisitions for each firm-year by the total *number* of transactions undertaken by the firm in the year subsequent to the overpricing measurement (*NUM*), as well as by the aggregate *value* of all transactions in the subsequent year, deflated by the bidder's market value at the beginning of the year (*VALUE*). For firm-years with no acquisition activities on the SDC database, the value of these two variables is set to 0. We compute the two acquisition intensity measures, *NUM* and *VALUE*, for all bidders, as well as for the subsamples of transactions that are financed fully by stock or by cash. For each firm-year, we also compute, for all acquisitions, the average percentage of the transaction value paid for by stock (*STOCK%*).

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[13] The hedge portfolio abnormal returns are those obtained from a trading strategy that invests long in the first diagonal portfolio (Lowest-Lowest), comprised of the quintile with the least overpriced shares, and shorts the fifth diagonal portfolio (Highest-Highest), consisting of the quintile with the most overpriced shares. For each portfolio, we compute monthly equally weighted and value-weighted abnormal returns subsequent to the measurement of mispricing (with a minimum four-month lag between fiscal year-end and the first month of the return period). Abnormal returns for each individual firm in the portfolio are calculated by subtracting from its raw return the equally weighted or value-weighted returns of a benchmark portfolio matched by size, book-to-market, and momentum (prior year return).

[14] We also ran a multivariate analysis: Fama-MacBeth regressions of monthly stock returns subsequent to the overpricing measurement run on: (1) firm size (*Ln*(*MV*)) and the book-to-market (*Ln*(*B*/*M*)) ratio, the common determinants of returns; (2) the returns of the previous periods (*Ret_1*,...,*Ret_3*), serving as controls; (3) the individual overpricing proxies—*P*/*E* (relative P/E), *DACC* (discretionary accruals), and *NEQ* (equity issues); and (4) the two composite overpricing indicators (*OVE1* and *OVE2*). These regressions are run with the overpricing indicators lagged one, two, and three years to the returns. The estimates of this regression indicate that the overpricing indicators, individually and in combination, are all negatively and significantly associated with subsequent stock returns, confirming in a multivariate context the validity of our overpricing indicators.

TABLE 1

Overpricing Indicators and Future Abnormal Stock Returns

	Equally Weighted			**Value-Weighted**		
Portfolio	**adj_ew** $t+1$	**adj_ew** $t+2$	**adj_ew** $t+3$	**adj_vw** $t+1$	**adj_vw** $t+2$	**adj_vw** $t+3$
Lowest-Lowest (LL)	0.0018	0.0003	−0.0012	0.0026	0.0020	0.0011
	1.59	0.36	−0.36	2.53	2.03	0.28
Low-Medium	−0.0029	−0.0022	−0.0016	−0.0004	0.0003	−0.0009
	−4.62	−4.16	−3.15	−1.11	0.44	−1.56
Medium-Medium	−0.0031	−0.0025	−0.0017	−0.0009	0.0004	−0.0006
	−4.67	−4.22	−3.26	−1.54	0.85	−1.09
Medium-High	−0.0043	−0.0028	−0.0029	−0.0017	−0.0002	−0.0006
	−6.83	−4.07	−4.36	−2.64	−0.41	−1.40
Highest-Highest (HH)	−0.0100	−0.0106	−0.0097	−0.0039	−0.0031	−0.0029
	−10.47	−9.21	−5.59	−4.14	−3.87	−3.77
Hedge (LL − HH)	0.0118	0.0109	0.0085	0.0065	0.0051	0.0040
	9.17	7.14	4.68	3.69	3.31	3.16
CAPM α	0.0122	0.0113	0.0096	0.0066	0.0057	0.0044
	9.26	7.78	5.77	3.78	3.65	3.33
Three-factor α	0.0129	0.0115	0.0098	0.0069	0.0064	0.0053
	9.65	7.84	5.63	4.02	3.88	4.05
Four-factor α	0.0116	0.0102	0.0083	0.0061	0.0046	0.0042
	9.37	7.03	4.81	3.52	3.14	3.43

Sample period is 1990–2006. Variable definitions are as follows: Indicator #1 of overpricing (*OVE1*) and indicator #2 of overpricing (*OVE2*) are, respectively, the first and second principal component of the firm's relative P/E, discretionary accruals, and equity issuance. Relative P/E (*P/E*) is the difference between the firm's P/E ratio (Compustat data #199/#58) at fiscal year-end and the four-digit SIC industry median P/E ratio for all firms in the sample firm's four-digit SIC industry. In the computation of four-digit industry median P/E ratio, we exclude firms with negative P/E ratios and firms with P/E ratios greater than 100. Firms with negative P/E ratios are excluded in the sample. Discretionary accruals (*DACC*) are the difference between the firm's total accruals and "normal accruals," deflated by average total assets (Compustat data #6). Total accruals are measured as the difference between earnings before extraordinary items (Compustat data #123) and cash from operation (Compustat data #308). Normal accruals are a constant proportion of the firm's current-year sales (Compustat data #12), based on the ratio of the sum of total accruals to the sum of sales over the prior five years (year $t-5$ to year $t-1$) (Chan et al. 2006). Equity issuance (*NEQ*) is the difference between Log(MV_t/MV_{t-5}) and $r(t-5, t)$, where $MV_t(MV_{t-5})$ is the firm's market capitalization (Compustat data #199 × #25) at the end of fiscal year $t(t-5)$ and $r(t-5, t)$ is the log stock return from year $t-5$ to year t. The eigenvalues of the principal component analysis are 1.067, 1.000, and 0.933. The eigenvectors for the first (second) principal component are 0.48, 0.52, and 0.71 (0.74, −0.68, and −0.004). From January 1990 to December 2006, portfolios are formed monthly by assigning firms into quintiles based on the values of *OVE1* and *OVE2*, respectively, in the most recent fiscal year, and then retaining firms in the intersection of the two portfolios. For example, the portfolio labeled "Highest-Highest" ("Lowest-Lowest") consists of firms that are in the top (bottom) quintiles ranked by both *OVE1* and *OVE2*. A minimum four-month lag is required between the fiscal year-end, for which *OVE1* and *OVE2* are measured, and the first month of the return period. The monthly abnormal return for a firm is computed by subtracting the equally weighted or value-weighted monthly return of a benchmark portfolio matched by size, book-to-market, and momentum (return of the most recent 12 months) from the firm's raw monthly return. Monthly abnormal returns of each portfolio are the average of abnormal returns across all firms in the portfolio. The hedge portfolio is formed by taking a long position in the portfolio with the lowest quintiles of *OVE1* and *OVE2*, and a short position in the portfolio with the highest quintiles of *OVE1* and *OVE2*. The CAPM α is the intercept from the regression of the raw returns or characteristics-adjusted returns of the hedge portfolio on the excess return of the market portfolio. The three-factor α is the intercept from the regression of the returns of the hedge portfolio on the three Fama-French factors, including market risk-free return, the size effect (*SMB*), and the book-to-market effect (*HML*). The four-factor α is the intercept from the regression of the returns of the hedge portfolio on the three Fama-French factors and a momentum factor.

Summary Statistics

Table 2 provides summary statistics. Panel A refers to all firms with available data, whereas Panel B focuses on the bidders. The data indicate that bidders are larger (see *MV*) than non-bidders at the median ($399 million versus $249 million), and are also larger at the mean. Bidders also have a substantially higher industry-adjusted P/E ratio than non-bidders—our first indication that overpricing is related to acquisitions. The same pattern emerges for the other components of the overpricing index: bidders have larger discretionary accruals and more equity issued prior to acquisition than non-bidders, and the two composite mispricing indicators (*OVE1* and *OVE2*) are substantially larger for bidders than non-bidders. Thus, shares of bidding firms, as a group, are more overpriced than those of non-acquiring firms. In untabulated tests, we find that the overpricing indicators are significantly correlated with acquisition intensity and with the change in goodwill.

IV. RESULTS

We employ two methodologies to examine our three research questions. The first is a simultaneous classification of the observations by the main diagonal of the 5 × 5 classification of firms by quintiles of the two overpricing indicators (principal components), *OVE1* and *OVE2*. The five main diagonal groups span from the Lowest-Lowest overpricing to Highest-Highest overpricing, as described and tested in the previous section. The second methodology is a multivariate regression or logit analyses of the focus variables (e.g., goodwill write-offs), run on share overpricing and control variables.

Question 1: Share Overpricing, Acquisition Intensity, and Goodwill

Table 3 reports the association between share overpricing and firms' acquisition intensity and the consequent goodwill change in the year following the overpricing.[15] It presents the mean acquisition value and frequency (in parentheses) for the main diagonal of the sample firms classified by quintiles of the two overpricing composite indicators (*OVE1* and *OVE2*). Thus, the left cell (Lowest-Lowest) includes all firms that are classified by both indicators as falling within the least overpriced (presumably underpriced) quintile, whereas the right cell (Highest-Highest) includes all firms falling into the most overpriced category by both *OVE1* and *OVE2*. Moving along the mispricing spectrum from left to right across each row, the data in Table 3 portray a strong and monotonic increase in both mean acquisition value (divided by market value) and in the mean number of acquisitions per firm (in parentheses) in the year following the mispricing. Thus, for all sample firms (the first row of Table 3), as one moves from the least to the most overpriced firms, acquisition value (frequency) increases from 0.026 (0.105) to 0.115 (0.369), a three- to four-fold increase. A monotonic increase in acquisition intensity holds also for the subsample of bidder firms, corroborating earlier findings by Dong et al. (2006).[16]

Moving to a main theme of this study, Table 3 reports, for "all firms" and for "bidders," the mean percentage change in accounting goodwill in the year subsequent to the overpricing. It is evident for both groups of firms that the change in goodwill increases monotonically with share

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[15] Our inferences regarding this association are unchanged when we extend the post-overpricing horizon of measuring acquisition intensity and goodwill growth from one year to three years.

[16] We confirm the association between our overpricing indicators and next year's acquisition intensity with an untabulated logistic regression of acquisition intensity (1 for acquisition, 0 for no acquisition) run on the composite overpricing indicators, the individual overpricing proxies, the lagged values of the overpricing indicators, and the following control variables: *Log*(*MV*), cash flows from operations, the change in the S&P 500 index, and industry indicators. All coefficients of the overpricing indicators are positive and statistically significant in this analysis.

TABLE 2

Descriptive Statistics of the Sample Firms

Panel A: All Available Firms

	n	Mean	Standard Deviation	25%	Median	75%
Market value (*MV*) ($ million)	54218	2430.69	10796	55.61	249.02	1048.96
Relative P/E (*P/E*)	54218	18.060	123.54	−3.344	0.110	7.946
Discretionary accruals (*DACC*)	54218	0.015	0.392	−0.032	0.002	0.042
Equity issuance (*NEQ*)	54218	0.119	0.464	−0.084	0.023	0.217
Indicator #1 of overpricing (*OVE1*)	54218	0.039	0.997	−0.383	−0.169	0.206
Indicator #2 of overpricing (*OVE2*)	54218	0.011	0.888	−0.138	−0.075	0.006
Cash flows from operation (*CFO*)	54218	0.110	0.307	0.052	0.099	0.161

Panel B: Firms with Acquisition Activities (Bidders)

	n	Mean	Standard Deviation	25%	Median	75%
Market value (*MV*) ($ million)	7055	2371.02	9568	110.78	399.38	1329.13
Relative P/E (*P/E*)	7055	20.821	153.43	−2.769	0.724	8.863
Discretionary accruals (*DACC*)	7055	0.018	0.149	−0.031	0.003	0.040
Equity issuance (*NEQ*)	7055	0.222	0.506	−0.030	0.091	0.348
Indicator #1 of overpricing (*OVE1*)	7055	0.214	0.944	−0.306	−0.026	0.459
Indicator #2 of overpricing (*OVE2*)	7055	0.034	0.289	−0.131	−0.073	0.008
Cash flows from operation (*CFO*)	7055	0.120	0.108	0.062	0.109	0.170
Number of acquisitions (*NUM*)	7055	1.345	0.929	1.000	1.000	1.000
Value of acquisitions (*VALUE*)	7055	0.278	0.645	0.047	0.120	0.316
Change of goodwill ($\Delta GDWL$)	7055	0.079	0.245	0.000	0.000	0.072
$\Delta GDWL$ (bidders with goodwill)	3764	0.103	0.258	0.0001	0.033	0.117

Sample period is 1990–2006. Variable definitions are as follows. Market value (*MV*) is the firm's inflation-adjusted capital market valuation of common equity at the fiscal year-end, in $ millions. Relative P/E (*P/E*) is the difference between the firm's P/E ratio (Compustat data #199/#58) at fiscal year-end and the four-digit SIC industry median P/E ratio for all firms in the sample firm's four-digit SIC industry. In the computation of the four-digit industry median P/E ratio, we exclude firms with negative P/E ratios and firms with P/E ratios greater than 100. Firms with negative P/E ratios are excluded in the sample. Discretionary accruals (*DACC*) are the difference between the firm's total accruals and "normal accruals," deflated by average total assets (Compustat data #6). Total accruals are measured as the difference between earnings before extraordinary items (Compustat data #123) and cash from operation (Compustat data #308). Normal accruals are a constant proportion of the firm's current-year sales (Compustat data #12), based on the ratio of the sum of total accruals to the sum of sales over the prior five years (year $t-5$ to year $t-1$) (Chan et al. 2006). Equity issuance (*NEQ*) is the difference between $\mathrm{Log}(MV_t/MV_{t-5})$ and $r(t-5, t)$, where $MV_t(MV_{t-5})$ is the firm's market capitalization at the end of fiscal year $t(t-5)$ and $r(t-5, t)$ is the log stock return from year $t-5$ to year t. Indicator #1 of overpricing (*OVE1*) and indicator #2 of overpricing (*OVE2*) are, respectively, the first and second principal component of the firm's relative P/E, discretionary accruals, and equity issuance. Cash flows from operation (*CFO*) are the amount of net cash flows from the firm's operating activities (Compustat data #308), deflated by lagged total assets (Compustat data #6 for year $t-1$). Panel B includes firm-years with acquisition activity in the subsequent year between 1990 and 2006. The number of acquisitions (*NUM*) is the total number of acquisition transactions undertaken by the firm in the subsequent year. The value of acquisitions (*VALUE*) is the combined value of all acquisition transactions in the subsequent year, deflated by the acquiring firm's market value at the beginning of the year. The change of goodwill ($\Delta GDWL$) is the change in the amount of goodwill (Compustat data #204) deflated by the firm's total assets (Compustat data #6).

TABLE 3

Mean Value (Frequency) of Acquisitions and Changes in Goodwill ($\Delta GDWL$) over Subsequent Year for Portfolios of Firms Classified by Share Overpricing

		Main Diagonal of Sample Firms Classified by Quintiles of *OVE1* and *OVE2*				
Sample	**Form of Payment**	**Lowest-Lowest**	**Low-Medium**	**Medium-Medium**	**Medium-High**	**Highest-Highest**
All firms	All	0.026	0.031	0.038	0.052	0.115
		(0.105)	(0.148)	(0.223)	(0.309)	(0.369)
% change of goodwill		0.005	0.009	0.012	0.016	0.031
Bidders	All	0.298	0.324	0.348	0.387	0.499
		(1.212)	(1.262)	(1.342)	(1.502)	(1.708)
% change of goodwill		0.034	0.045	0.047	0.060	0.121
Bidders	Stock	0.301	0.319	0.359	0.373	0.489
		(1.052)	(1.142)	(1.300)	(1.421)	(1.502)
% change of goodwill		0.039	0.065	0.074	0.115	0.171
Bidders	Cash	0.221	0.203	0.147	0.128	0.216
		(1.069)	(1.103)	(1.123)	(1.194)	(1.184)
% change of goodwill		0.088	0.052	0.069	0.066	0.072

Sample period for acquisition is 1990–2006. The main diagonal of sample firms classified by quintiles of *OVE1* and *OVE2* is formed by assigning firms in each year into quintile portfolios ranked by the values of *OVE1* and *OVE2*, respectively, and then retaining firms in the intersection of the two portfolios. For example, the portfolio labeled "Highest-Highest" ("Lowest-Lowest") consists of firms that are in the top (bottom) quintiles ranked by both *OVE1* and *OVE2*. "All firms" includes all firms with data on *OVE1* and *OVE2*, and "Bidders" includes only those with acquisition activities in the subsequent year between 1990 and 2006. "Stock" includes firms with acquisitions that are completely paid with the shares of the acquiring firm, and "Cash" includes firms with acquisitions that are fully paid with cash.

overpricing. Thus, for "all firms" ("bidders"), the annual goodwill growth is 0.5 percent (3.4 percent) for the least overpriced firms, and 3.1 percent (12.1 percent) for the most overpriced firms.[17] The lower part of Table 3 presents the overpricing diagonal data for stock-only and cash-only acquisitions, from the least (left) to the most (right) overpriced firms. It is apparent that the increasing pattern of acquisition intensity and goodwill growth with share overpricing exists only for acquisitions by stock. For cash-financed acquisitions, both acquisition intensity and goodwill growth are roughly unchanged across the share overpricing spectrum, confirming the Shleifer and Vishny (2003) prediction that overpriced companies will primarily use shares for corporate acquisitions.

We also run regressions of the growth in goodwill during the year subsequent to the overpricing measurement (dependent variable) on the share overpricing composite indicators, the lagged indicators, and control variables, including firm size, cash flows from operation, the percentage of transaction value acquired with stock over the previous year, and the return on the S&P 500 index during the prior year. For all regressions (untabulated), the overpricing coefficients are positive and statistically significant, indicating in a multivariate context that goodwill from an acquisition is positively related to share overpricing prior to acquisition. We also introduce to the examination three potentially intervening variables: the effectiveness of corporate governance, managerial share ownership in the firm, and whether the acquisition target is a domestic or foreign enterprise. If overvalued firms make some ill-advised acquisitions, as hypothesized by Stein (1996), then effective governance should restrain managers, avoiding some of these acquisitions and preventing overpayment for targets. This restraint will be reflected in lower goodwill. Substantial managerial share ownership might provide additional incentive to managers of overvalued firms to engage in acquisitions and even to overpay for the target to "buy themselves out" of the overpricing predicament. As for foreign targets, when growth in the domestic market slows down, managers search for growth by acquisitions abroad and, accordingly, the intensity of acquisitions is likely to be higher for foreign targets.[18]

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[17] In untabulated analysis, we confirm that the association between share overpricing and acquisition/goodwill also holds for various subperiods of our 1990–2006 sample period.

We measure governance effectiveness by the Gompers et al. (2003) indicators, which primarily reflect shareholder rights. The governance indicator, which increases as governance becomes weaker, and its interaction with overpricing indicators are indeed positive and statistically significant for both acquisition intensity and the change in goodwill. Thus, lax corporate governance and its interaction with overpricing enhance further acquisition activity and overpayment for targets, leading to higher goodwill. The effect of managerial ownership and its interaction with overpricing on acquisitions and goodwill is significantly positive (untabulated). This effect, however, is concave: managers with small ownership stakes are primarily concerned with justifying the overpricing by acquisitions, whereas managers with larger ownership shares restrain acquisitions because they are increasingly concerned with the negative long-term effect of acquisitions on their considerable shareholdings. As to foreign acquisitions, the coefficients of bidder share overpricing, for both intensity of acquisitions and goodwill growth, are larger for foreign targets than for domestic targets, providing evidence of an extra incentive to engage in foreign acquisitions to rejuvenate growth. The coefficients of the control variables and the overpricing indicators are all as expected.

Recall from Section II that our first question relates to the effect of acquisition with overpriced shares on goodwill. On the one hand, the evidence (e.g., Dong et al. 2006) shows that overvalued bidders tend to acquire overvalued targets, thereby increasing the likelihood of recognizing goodwill. On the other hand, SV's model postulates that the acquisition price will not be higher than the expected synergies. Such a price cap lowers the expected goodwill. Our analysis, reported in this section, indicates the predominance of the former factor: bidders' share overpricing is positively associated with the goodwill from acquisitions. Weak corporate governance and managerial share ownership (up to a point) further enhance goodwill through higher premiums paid for targets.

Question 2: Overpriced Shares and Goodwill Write-Offs

The effect of overpricing on goodwill *write-off* is the central issue of this study. Recall from Section II that if bidder managers follow the Shleifer and Vishny (2003) prescription of acquiring firms only when the acquisition price is lower than the synergies (future cash flows from acquisition), there will be no goodwill write-off. Stated differently, the existence of goodwill, even if large, does not necessarily imply subsequent write-off. Conversely, if managers follow a short-term oriented policy of overpaying for the synergies (Stein 1996) and/or grossly overestimating the synergies (Roll 1986), goodwill write-offs are likely. In this section, we examine the relation between share overpricing and goodwill write-offs.

Table 4 presents the relationship between bidders' share overpricing and goodwill write-off by quintiles (main diagonal) of overpricing. We measure share overpricing as the average of the

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[18] Zenner et al. (2008) argue that shareholders of foreign companies are reluctant to sell their companies for stock due to "home bias" in investments. Accordingly, it will take large premiums to convince foreign shareholders to sell.

TABLE 4

The Relation between Share Overpricing and Subsequent Goodwill Write-Offs and Acquisition-Related Lawsuits

	Main Diagonal of Sample Firms Classified by Quintiles of *OVE1* and *OVE2*				
Sample Description	**Lowest-Lowest**	**Low-Medium**	**Medium-Medium**	**Medium-High**	**Highest-Highest**
1. Mean amount of goodwill write-offs for all firms with data on share overpricing	0.0038	0.0064	0.0168	0.0207	0.0507
2. Mean amount of goodwill write-offs for firms with acquisitions activities over 1990–2000	0.0069	0.0198	0.0306	0.0593	0.1056
3. Mean amount of goodwill write-offs for all firms with impairment over 2001–2006	0.0263	0.0546	0.0879	0.0901	0.2183
4. Mean amount of goodwill write-offs for firms with acquisitions activities over 1990–2000 and impairment over 2001–2006	0.0167	0.0595	0.0931	0.1026	0.2154
5. Percentage of firms sued for using inflated stock as a currency in acquisitions over 1996–2006.	0.00%	4.46%	7.97%	11.11%	13.86%
6. Percentage of acquiring firms sued for using inflated stock as a currency in acquisitions, and reporting goodwill write-offs in 2001–2006.	0.00%	6.87%	17.72%	34.29%	39.86%

Information on goodwill write-offs is based on the total amount of goodwill write-offs between 2001 and 2006 (deflated by total assets). Sample period for acquisition activities is 1990–2000. Overpricing indicators and components (*P/E*, *DACC*, *NEQ*, *OVE1*, and *OVE2*) are the average value of overpricing for the year prior to the acquisition year.

overpricing indicators over the acquisition period ending in 2000.[19] The total amount of goodwill write-offs (scaled by bidders' total assets) relates to the period 2001–2006. The top row reports findings for all sample firms, both with and without acquisitions or write-offs. The data show that the average goodwill write-off increases monotonically with share overpricing, from 0.0038 (0.38 percent of total assets) for the quintile of firms with the lowest overvaluation to 0.0507 (5.07 percent of total assets) for the quintile of firms with the highest share overpricing. The second row refers to firms that made acquisitions between 1990 and 2000, and shows an increase in write-offs from 0.7 percent of total assets to 10.6 percent. The third row, referring to firms with write-offs between 2001 and 2006, shows a similar pattern, but with substantially larger write-offs. The total amount of write-off increases from 2.6 percent (lowest overpricing) to 21.8 percent (highest overpricing). For the subsample of firms with acquisitions between 1991 and 2000 *and* goodwill write-offs between 2001 and 2006 (fourth row), the write-offs increase from 1.7 percent to 21.5 percent. Thus, the goodwill write-offs made by the quintile of the most overpriced bidders amount to over one-fifth of their total assets—a staggering loss of value from acquisitions. Share overpricing is, thus, strongly associated with goodwill write-offs.

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[19] Share overpricing is measured in the year preceding the acquisitions made between 1990 and 2000. For firms with multiple acquisitions between 1990 and 2000, share overpricing is the average of the overpricing in the year prior to each acquisition.

To solidify the causation from bidders' share overpricing to goodwill write-offs, Lines 5 and 6 of Table 4 present data on the frequency of lawsuits alleging share price manipulation by bidders (that is, acquisition with inflated stock).[20] Such lawsuits are often filed soon after the write-off announcement. Line 5 reports the percentage of lawsuits filed against all acquiring firms, categorized by overpricing quintiles. It is evident that the lawsuit frequency rises steeply, from zero for the least overpriced bidders to 13.9 percent of the firms in the highest overpricing quintile. Line 6 restricts the sample to firms with goodwill write-offs in the period 2001–2006, and shows that the frequency of lawsuits increases with overpricing from zero to 40 percent. Thus, according to plaintiffs, their losses from goodwill write-offs primarily originate with the overpriced shares used as payment for the acquisition, an overpricing allegedly brought about by managers' manipulation and hype.

We also perform multivariate logistic and Tobit analyses (not tabulated here), regressing the incidence of write-off (logit) and the amount of goodwill write-off scaled by total assets (Tobit) on the two overpricing indicators, *OVE1* and *OVE2*, and their individual components (*P/E*, *DACC*, and *NEQ*). We also include a host of control variables affecting goodwill write-offs: the percent of the acquisition price paid in shares, the percentage of acquisition involving foreign targets, the number of acquisitions, the total value of acquisitions deflated by the bidder's beginning market value, the amount of goodwill, weak governance, the bidder's size, and industry indicators.[21] All the independent variables are measured by their average value during the years of acquisition (1990–2000). The estimates indicate that in all the logistic regressions, the two overpricing composite indicators, as well as their individual components, are positive and highly significant. Acquisition of foreign targets adds significantly to the likelihood of write-off, probably due to managers' belief that growth in certain foreign markets exceeds domestic growth (Bodnar and Weintrop 1997), providing managers with strong incentives to pay high premiums for foreign acquisitions, which results in a large goodwill write-off. The coefficient on weak governance is significantly positive, as is its interaction with overpricing (*OVE1*), indicating an incremental contribution of ineffective, subservient directors during the acquisition period to subsequent goodwill write-offs. Bidders' size is also positively associated with goodwill write-off. The Tobit analysis focuses on the total value of write-offs and confirms the findings of the logistic analysis of an association between bidders' overpriced shares and the incidence, as well as the amount, of goodwill write-off. Weak corporate governance and acquisition of foreign targets further enhance the relationship between overpricing and write-offs.

It is clear from the strong and consistent association between share overpricing and subsequent goodwill write-offs that many managers of overvalued firms do not follow the long-term maximization strategy, prescribed by Shleifer and Vishny (2003), of paying less than the acquisition's perceived synergies (in which case, there will be no write-off). Either managers follow a short-term stock price enhancement strategy (Stein 1996) and pay for the acquisition more than the long-term expected synergies,[22] or, in their optimism and overconfidence (e.g., Ben-David et al. 2007), they overstate the synergies. Furthermore, because bidder managers may obtain personal wealth gains from acquisitions, they also choose to pursue acquisitions even though the deals do not necessarily increase shareholder value (Harford and Li 2007).

Question 3: The Economic Implications of Goodwill Write-Offs

We showed in the preceding section that the overpricing of bidders' shares is positively associated with the subsequent goodwill write-off, suggesting an adverse consequence of acquisition with overpriced shares. SV, though, argue that such acquisitions benefit shareholders in the long run, causing share prices to fall less than without the acquisitions (the fall is due to the correction of the overpricing). So, are these write-offs just a benign accounting ritual, or an important business event? Do goodwill write-offs signal imprudent acquisition strategy, calling for a serious examination of past investment decisions, or perhaps goodwill impairment is just a byproduct of successful acquisitions motivated by market timing?

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[20] We thank Mary Brooke Billings for suggesting this test and providing the lawsuit data.

[21] The dependent variable in the logistic regression is 1 for write-off, and 0 for no write-off. In the Tobit analysis, the dependent variable is the total amount of write-offs between 2001 and 2006.

[22] An acquisition often boosts short-term stock prices because it increases sales and EPS, portraying enhanced growth so coveted by investors.

We address these questions by asking: Did the acquisitions *moderate* the post-acquisition negative returns of bidders from the reversal of the share overpricing, as Shleifer and Vishny (2003) argue, in which case the goodwill write-off is indeed a non-event? Or did the acquisitions *worsen* the negative returns, in which case the goodwill write-off has important negative implications for the firm's investment strategy? Table 5 uses Fama-MacBeth monthly regressions to relate firms' returns during the three years following the overpricing measurement to the following factors: (1) firm size (*Ln*(*MV*)) and book-to-market (*Ln*(*B*/*M*)), the conventional determinants of subsequent returns; (2) three-year lagged returns, as controls for future returns; (3) the two overpricing composite indicators; (4) the amount of goodwill; and (5) the focus of this analysis—whether the firm acquired other companies during the year following the overpricing measurement (*ACQ*). This examination, run on firms with and without acquisitions, thus holds constant the degree of overpricing and the consequent reversal of stock prices due to the overpricing, thereby focusing on the effect of acquisitions on the subsequent returns. We also include in the regression the interactions between overpricing and acquisition (*OVE1* × *ACQ* and *OVE2* × *ACQ*) for further insight.

The estimates in the left three columns of Table 5 show, as expected, that the overpricing indicators (*OVE1* and *OVE2*) are negatively associated with subsequent returns, reflecting the negative effect of the overpricing reversal on returns. The coefficient on the indicator for acquisitions, *ACQ*, is negative and statistically significant in each of the three post-overpricing years, indicating that acquisitions *worsen*, on average, the post-acquisition returns of the firm. Thus, for example, in year $t+1$, the bidders suffer an *extra* negative abnormal monthly return of −0.37 percent (−4.5 percent on an annual basis) relative to similarly overpriced non-acquirers. The interaction variables *OVE1* × *ACQ* and *OVE2* × *ACQ* are also negative and statistically significant, indicating that acquisition with overpriced shares adversely affects subsequent stock returns beyond the reversal of the overpricing.

We have so far evaluated the economic meaning of goodwill write-offs in terms of post-acquisition stock returns. An alternative approach focuses on the industry-adjusted accounting return-on-assets (*ROA*) in the year following acquisition. We, therefore, regress (reported in the right column of Table 5) the firm's industry-adjusted *ROA* on the overpricing indicators (*OVE1* and *OVE2*), the amount of goodwill, lagged industry-adjusted *ROA*, and the focus of this analysis—whether the firm made acquisitions (*ACQ*, and its interaction with overpricing). The coefficient of *ACQ* and those of the two interactions are, once again, negative and significant, corroborating the stock returns analysis.[23] Acquisitions by overvalued firms negatively impact their performance, as measured by either market or accounting variables.[24]

Our final procedure for assessing the economic relevance of goodwill write-offs is to trace the fortunes of goodwill-impaired firms from the acquisition through the write-off. We do this in Table

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[23] The dependent variable of this regression is industry-adjusted *ROA* of year $t+1$. Because the mean value of the industry-adjusted *ROA* of year $t+1$ is 0.009, this estimate indicates that acquisition reduces the profitability of year $t+1$ by one-third (33 percent) of the mean value of the industry-adjusted *ROA*.

[24] In the tests of Table 5 and this untabulated analysis, we assess whether the negative coefficients on *ACQ* reflect the effect of the really high valuation of the acquirers by including in the regression an indicator variable, *TOPOVE*, for firms in the top quintile of both *OVE1* and *OVE2*, and its interaction with *OVE1* and *OVE2*. In this untabulated sensitivity test, *ACQ* and its interaction with overpricing continue to be significantly negative.

TABLE 5

Acquisition with Overpriced Shares and Future Performance

Variable	Future Stock Returns $t+1$	Future Stock Returns $t+2$	Future Stock Returns $t+3$	Future *ROA* $t+1$
Ln(MV)	−0.0010	−0.0010	−0.0010	—
	−2.17	*−2.18*	*−2.16*	
Ln(B/M)	0.0020	0.0021	0.0021	—
	2.85	*2.88*	*2.90*	
Ret_1	−0.0383	−0.0381	−0.0381	—
	−8.50	*−7.97*	*−7.94*	
Ret_2	0.0066	0.0066	0.0068	—
	4.48	*4.44*	*4.49*	
Ret_3	−0.0025	−0.0025	−0.0025	—
	−2.32	*−2.39*	*−2.83*	
OVE1	−0.0026	−0.0020	−0.0010	−0.008
	−4.52	*−3.71*	*−2.15*	*−5.02*
OVE2	−0.0020	−0.0017	−0.0009	−0.004
	−4.11	*−3.43*	−1.76	*−4.09*
ACQ	−0.0037	−0.0033	−0.0015	−0.003
	−5.62	*−4.33*	*−3.15*	*−4.18*
OVE1 × *ACQ*	−0.0031	−0.0029	−0.0023	−0.006
	−5.23	*−4.66*	*−2.41*	*−4.36*
OVE2 × *ACQ*	−0.0025	−0.0023	−0.0024	−0.006
	−2.94	*−2.65*	*−2.54*	*−2.75*
GOODWILL	−0.0091	−0.0058	−0.0053	−0.009
	−3.49	*−2.81*	*−1.98*	*−4.17*
ROA	—	—	—	0.650
				13.63

Italic numbers indicate statistical significance at less than the 5 percent level (two-tailed test).

For the return regressions, every month between January 1990 and December 2006 the cross-section of firms' monthly stock returns is regressed on firm size (*Ln(MV)*), defined as the log of the firm's inflation-adjusted market capitalization, the log of the firm's book-to-market ratio (*Ln(B/M)*), the firm's previous monthly return (*Ret_1*), the previous year's return from month $t-12$ to $t-2$ (*Ret_2*), the return from month $t-36$ to $t-13$ (*Ret_3*), *OVE1* and *OVE2* lagged either one, two, or three years to returns, an indicator variable, *ACQ*, that equals 1 if the firm acquired other companies during the year following the overpricing measurement, and 0 otherwise, the interactions between overpricing and acquisition (*OVE1* × *ACQ* and *OVE2* × *ACQ*), and the amount of goodwill (Compustat data #204) deflated by lagged total assets (*GOODWILL*). Reported statistics are the mean coefficient estimates and t-statistics from cross-sectional regressions. The dependent variable of the regressions for future accounting profitability, ROA_{t+1}, is the firm's industry-adjusted return on assets before the effect of goodwill impairment write-offs in year $t+1$. The firm's return on assets is the ratio of earnings before extraordinary items (Compustat data #18) without the effect of goodwill write-off (Compustat data #368) to average total assets (Compustat data #6). *ACQ* equals 1 if there is acquisition activity during the previous one-year period, and 0 otherwise. *OVE1* and *OVE2* are for the prior fiscal year. Following Petersen (2009) and Gow et al. (2010), we run the regressions for *ROA* with year indicators included, and report the significance level of the coefficient estimate obtained from firm-level clustering. The period of acquisition activity included in the tests is 1990–2005.

6, focusing on two firm performance measures: abnormal stock returns and the industry-adjusted accounting return-on-assets before the write-offs. For both performance measures, we control for the effect of overpricing before acquisition by matching acquirers with non-acquirers on the basis of firm size (same size decile) and overpricing (the same quintile of *OVE2* and the closest values of

OVE1) in the year before acquisition. The abnormal stock returns and industry-adjusted return-on-assets of the acquirers in Table 6 are, thus, the stock returns and industry-adjusted return-on-assets of the acquirers minus the stock returns and industry-adjusted return-on-assets of the matched non-acquirers, respectively.[25]

Table 6 provides data for both the year-by-year performance around acquisition and write-off, and for the entire trip from acquisition through the write-off (right column). Acquisitions without subsequent write-offs, reported in Panel A, provide the benchmark for this analysis. From the year before acquisition ($t-1$) through the sixth year after it, the cumulative mean and median abnormal stock returns for these firms are −8.27 percent and −2.31 percent, respectively (right column), indicating the inferior performance of acquirers compared to non-acquirers. Things are very different for firms with goodwill write-offs, as reported in Panel B. Of the 504 firms for which we have complete data on acquisitions and goodwill write-offs, 100 firms (20 percent) do not survive three years after write-off—i.e., they went bankrupt or were acquired. As shown in Panel B, the data for the 404 firms that made it through the third year after write-off indicate that both the mean and median returns during the period from acquisition through write-off are decidedly negative: −54.28 percent and −47.12 percent, respectively. The returns for the write-off year (year 0) and subsequent years are particularly large and negative. The large and negative accounting return-on-assets numbers in Panel B relative to those of Panel A are consistent with the negative stock returns of the write-off firms. In an untabulated test, we use the Fama-MacBeth monthly regressions to relate the event of goodwill write-off (*WRITEOFF*) to post-write-off stock returns while controlling for firm size, book-to-market, recent returns, overpricing, goodwill, and acquisition. Results indicate a significantly negative coefficient on the write-off event, confirming the lower future abnormal returns for firms with a goodwill write-off. The evidence, thus, confirms that goodwill write-off is not an expected outcome of a rational investment decision; rather, it reflects an excessive payment for targets acquired with inflated shares.

The negative effect of acquisitions on the subsequent returns of overvalued firms indicates that many acquisitions are indeed ill-advised, because of either overpayment or strategic misfits. It also clarifies that the documented underperformance of acquiring companies (Loughran and Vijh 1997) is partially due to the inevitable price reversal of overvalued firms, but also due to the ill-advised acquisitions made by many overvalued firms. Since acquisition with overvalued shares is closely related to goodwill write-off, the estimates of Table 5 indicate that goodwill write-off is often the result of ill-advised acquisitions exacerbating the long-term negative returns of overvalued bidders, and not, as Shleifer and Vishny (2003) have argued, the byproduct of a prudent investment decision moderating the overpricing reversal. A goodwill write-off is, thus, an important business event that calls for a reassessment of the firm's investment strategy.

Our findings of the negative effect of acquisitions on the subsequent returns of overvalued firms differ from those of Savor and Lu (2009), who report that overvaluation-driven acquisitions increase acquirers' long-run returns. The difference is probably attributable to the characteristics of the sample firms and the specifics of research methodology. While Savor and Lu (2009) study a sample of mergers during 1978–2003 and use the returns of bidders of attempted, but unsuccessful, mergers as a proxy for the long-term performance of non-acquiring bidders, we use a more recent sample of takeovers during 1990–2006, and control for the level of bidder overvaluation (rather than using a control group of unsuccessful mergers) when examining bidder long-run stock performance.

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[25] In the computation of matched returns, we follow the approach of Loughran and Vijh (1997) for acquirers that are delisted before the end of the intended return horizon and have truncated returns.

TABLE 6

Mean and Median Firm Performance around Acquisition and Goodwill Write-Off

Panel A: Benchmark: Acquiring Firms with No Goodwill Impairment (1,953 Firms)

	Years Relative to Acquisition (Year 0)								
Variable	**−1**	**0**	**+1**	**+2**	**+3**	**+4**	**+5**	**+6**	**Total Return Since Acquisition**
Abnormal stock return	0.0565	−0.0881	−0.0095	−0.0021	0.0146	−0.0195	−0.0473	−0.0331	−0.0827
	0.0357	−0.0284	−0.0013	−0.0015	0.0030	−0.0024	−0.0021	−0.0134	−0.0231
Return on assets	0.0038	−0.0107	−0.0157	−0.0122	−0.0132	−0.0148	−0.0125	−0.0107	
	0.0015	−0.0031	−0.0048	−0.0039	−0.0052	−0.0063	−0.0041	−0.0042	—

Panel B: Firms that Survived Up to Three Years after Impairment (404 Firms)

	Years Relative to Acquisition (0)			Years Relative to Impairment (0)					
Variable	**−1**	**0**	**+1**	**−1**	**0**	**+1**	**+2**	**+3**	**Total Return Since Acquisition**
Abnormal stock return	0.0924	−0.0039	−0.1405	−0.1925	−0.2833	−0.0547	−0.0395	−0.0428	−0.5428
	0.0361	−0.0519	−0.0495	−0.1893	−0.2619	−0.0591	−0.0431	−0.0895	−0.4712
Return on assets	0.0045	−0.0052	−0.0182	−0.0389	−0.0652	−0.0555	−0.0219	−0.0312	
	0.0046	−0.0023	−0.0055	−0.0277	−0.0308	−0.0181	−0.0164	−0.0077	—

In each panel, the first (second) row for each variable reports the mean (median) value of that variable. The sample in Panel A consists of 1,935 acquirers that have required Compustat data for up to six years after acquisition and report no goodwill impairment during 2001–2006. The sample in Panel B consists of 404 firms that report goodwill impairment over 2001–2003 and have the required Compustat data available for up to three years after the impairment. Abnormal stock returns are the acquirer's stock returns minus the return of a matched non-acquirer over the same period. Return on assets is before the effect of goodwill impairment and is adjusted for the firm's four-digit SIC industry average return on assets. Return on assets of an acquirer is the acquirer's industry-adjusted return on assets minus the industry-adjusted return on assets of a matched non-acquirer. The matching between an acquirer and non-acquirer is based on firm size (same size decile) and overpricing (same quintile of *OVE2* and the closest values of *OVE1* in the same quintile). For delisted firms, the computation of truncated returns for the acquirer and matched non-acquirer follows the approach of Loughran and Vijh (1997).

V. SHARE OVERPRICING PREDICTS GOODWILL WRITE-OFFS

The annual assessment of goodwill impairment required by GAAP is notoriously difficult to conduct. Most bidders fully absorb their acquisition targets so that there are no observable share prices to indicate goodwill impairment. Accordingly, early warning signs of impending goodwill impairment are of considerable importance to auditors and regulators like the Securities and Exchange Commission (SEC). We report in this section on the ability of our overpricing indicators to *predict* both the occurrence and magnitude of goodwill write-offs.[26] Because it is impossible to relate a goodwill write-off to a specific acquisition from Compustat data, we restrict our first prediction test to firms with a single acquisition during the sample period and a subsequent goodwill write-off, thereby attributing the reported write-off to its causal acquisition.

We run both a logit and a Tobit analysis: the former with the dependent variable of goodwill write-off (1) and no write-off (0), and the latter with the size of the write-off relative to total assets as the dependent variable. The independent variables are the lagged values of our two overpricing indicators (*OVE1* and *OVE2*), along with a variable distinguishing between domestic and foreign targets (*FOREIGN%*). Foreign acquisitions differ from domestic acquisitions along institutional, economic, and accounting dimensions that could affect the write-off prediction. The remaining independent variables—amount of goodwill, bidder's size, acquisition value, percentage of acquisition price paid in stock, and industry indicators—serve as control variables.

Table 7 reports the logit and Tobit prediction estimates. Panel A predicts the incidence of a write-off by logit and the size of the write-off by Tobit. Panel B predicts the lawsuits following the write-off. In both panels, the two overpricing indicators, *OVE1* and *OVE2*, are positive and significant. The right columns of the logit and Tobit tables in Panel A indicate that the marginal predictive contribution of the overpricing indicators is highest among the independent variables (except, of course, for the size of goodwill). We conclude, therefore, that bidders' share overpricing has a significant predictive ability with respect to subsequent goodwill impairment, along with the size of goodwill (an indicator of overpayment). These variables can, thus, serve as early (starting from the acquisition date) warning signs of impending write-offs, alerting auditors and regulators.[27] Panel B of Table 7 indicates that bidders' overpricing also predicts shareholder lawsuits that generally follow a write-off announcement.

VI. TIME-SERIES TEST

Our examination of the relation between share overpricing on the one hand, and acquisition intensity, goodwill growth, and write-off on the other, is based on *cross-sectional* analysis. As a robustness check, we also perform a *time-series* test for the relation between changes in share valuation regimes and subsequent changes in acquisition activity and write-offs.[28] Table 8 summarizes the results of this test, where we designate each sample firm in each year as

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[26] Hayn and Hughes (2006) investigate the prediction of goodwill write-offs. They examined several predictors: the purchase price premium over the target's market value, goodwill as a percentage of purchase price, number of bidders, market reaction to acquisition announcement, and the number of recent acquisitions by the bidder. They document that the purchase price premium, among other variables, predicts the write-off. Their study differs from our goodwill write-off prediction, reported in this section, in two important respects. First, the focus of our analysis—and main predictor—is the bidder's overpriced shares, which, according to our hypothesis, leads to acquisition and often overpayment. Second, Hayn and Hughes' (2006) sample is mostly from the period preceding SFAS 142 (1988–1998), although in a sensitivity test they add 56 cases under SFAS 142. Our goodwill write-offs are all from the current accounting regime (post-SFAS 142).

[27] Such an early warning sign is important given the evidence that managers tend to delay the recognition of goodwill impairment (Francis et al. 1996).

[28] We thank a reviewer for proposing this test.

TABLE 7

Overpricing Predicts Goodwill Write-Off and Acquisition-Related Lawsuits

Panel A: Logistic and Tobit Regressions Predicting Impairment versus No-Impairment for Firms with a Single Acquisition

	Logistic Regression		Tobit Regression	
Independent Variable	**Coefficient**	**Effect on Probability**	**Coefficient**	**Effect on Probability**
Intercept	0.262	—	−0.012	—
[p-value]	[0.647]		[0.776]	
OVE1	1.133	38.19%	0.043	11.09%
	[<0.001]		[<0.001]	
OVE2	0.728	18.15%	0.031	7.84%
	[0.042]		[0.029]	
STOCK%	0.039	0.86%	0.023	5.87%
	[0.463]		[0.231]	
VALUE	0.057	1.31%	0.022	5.63%
	[0.444]		[0.252]	
FOREIGN	0.438	11.02%	0.034	8.61%
	[0.178]		[0.178]	
GOODWILL	5.083	50.67%	0.041	10.37%
	[0.001]		[0.364]	
Log(MV)	0.118	2.99%	0.003	0.70%
	[0.080]		[0.335]	
Industry Indicators	Included		Included	
n	243		243	
Model χ^2	60.64		28.60	
(Model p-value)	(<0.001)		(<0.001)	
Pseudo R^2	18.02%		29.04%	
% correctly classified	69.14%			
% non-impairment in sample	51.44%			
Actual impairment predicted to be true	62.71%			
Actual non-impairment predicted to be true	75.20%			
Type I error	24.80%			
Type II error	37.29%			

Panel B: Logistic Regression of Future Incidences of Acquisition-Related Lawsuit on Indicators of Overpricing and Control Variables

Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Intercept	−3.233	−3.235	−3.474	−3.469	−3.568
[p-value]	[<0.001]	[<0.001]	[<0.001]	[<0.001]	[<0.001]
P/E	0.002	—	—	—	—
	[0.017]				
DACC	—	0.847	—	—	—
		[0.001]			
NEQ	—	—	1.068	—	—
			[<0.001]		

(continued on next page)

TABLE 7 (continued)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
OVE1	—	—	—	0.475	0.245
				[<0.001]	[0.014]
OVE2	—	—	—	0.318	0.112
				[0.002]	[0.003]
WEAK_GOV	—	—	—	—	0.121
					[0.015]
WEAK_GOV × *OVE1*	—	—	—	—	0.130
					[0.152]
WEAK_GOV × *OVE2*	—	—	—	—	0.831
					[0.007]
STOCK%	0.718	0.712	0.687	0.727	0.657
	[0.016]	[0.017]	[0.022]	[0.015]	[0.152]
Log(*MV*)	0.158	0.165	0.178	0.149	0.100
	[<0.001]	[<0.001]	[<0.001]	[<0.001]	[0.133]
HIGH_TECH	0.331	0.350	0.342	0.371	0.182
	[<0.001]	[<0.001]	[<0.001]	[<0.001]	[0.254]
Year Indicators	Included	Included	Included	Included	Included
Model χ^2	86.10	82.10	95.86	112.28	36.39
[p-value]	[<0.001]	[<0.001]	[<0.001]	[<0.001]	[<0.001]
Pseudo R^2	7.54%	7.21%	8.97%	10.33%	11.99%
n	3231	3231	3231	3231	571

Panel A includes firms that made only one acquisition during the period 1990–2004. Information on goodwill write-offs is based on the total amount of goodwill write-offs after the acquisition. In Panel A, the dependent variable in the logistic regressions is an indicator variable that equals 1 for firms reporting goodwill write-offs (Compustat data #368) after the acquisition, and 0 otherwise. The dependent variable in the Tobit regression is the total amount of goodwill write-offs after the acquisition (deflated by lagged total assets). *OVE1* and *OVE2* are the value of overpricing indicators for the year prior to the acquisition. *STOCK%* is the percentage of the acquisition value paid for by stock. *VALUE* is the value of acquisition (deflated by the acquiring firm's market value at the beginning of the acquisition year). *FOREIGN* is an indicator variable that takes the value of 1 for acquisition of foreign targets, and 0 otherwise. *GOODWILL* is the amount of goodwill attributable to acquisitions. *Log*(*MV*) is the log of the year-end inflation-adjusted market value of acquiring firms during the year of acquisition. In the logistic regression, "Effect on Probability" for a given independent variable indicates the marginal effect of a one-unit increase in that independent variable on the probability of firms reporting subsequent goodwill impairment as implied by the coefficient of that independent variable while holding all other variables constant. In the Tobit regression, "Effect on Probability" for each independent variable indicates the marginal effect of a one-unit increase in that independent variable on the probability that the amount of goodwill impairment conditional on the independent variable would be greater than zero.

In Panel B, information on acquisition-related lawsuits is obtained from Stanford University's securities litigation database from 1995 to 2006. The dependent variable is an indicator that equals 1 for firm acquisitions involved in acquisition-related litigation, and 0 otherwise. *P/E* is the average value of the firm's relative P/E across fiscal year that immediately precedes the year of acquisition during the period 1990–2000. For example, if a firm makes acquisitions in 1993, 1996, and 1998, *P/E* is the average value of the firm's relative P/E for 1992, 1995, and 1997. *DACC* (average discretionary accruals), *NEQ* (average equity issuance), *OVE1* (average value of the first overpricing indicator), and *OVE2* (average value of the second overpricing indicator) are defined and measured analogously. *WEAK_GOV* is the corporate governance quality index developed by Gompers et al. (2003). Sample years with the index available include 1995, 1998, 2000, 2002, and 2004. The interaction variable *WEAK_GOV* × *OVE1* (*WEAK_GOV* × *OVE2*) equals *WEAK_GOV* times *OVE1* (*OVE2*). *STOCK%* is the percentage of the acquisition value paid for by stock. *Log*(*MV*) is the log of the average inflation-adjusted year-end market value of acquiring firms during the years of acquisition. *HIGH_TECH* is an indicator variable that takes the value of 1 for firms from biotech, computer, electronics, instruments, telecom, and software industries, and 0 otherwise.

TABLE 8

Temporal Shifts in Share Mispricing, Subsequent Acquisition Activity, and Goodwill Impairment

Valuation Regime Change		Acquisition Activity in the Subsequent Year (Year $t+1$)				Subsequent Goodwill Write-Off
Year $t-1$ → Year t	**Shift**	**% Higher $ Acq.**	**% More # Acq.**	**% With Acq.**	**% No Acq. → Acq.**	**% Impairment**
UNDER → *OVER*	*UP*	11%	10%	23%	9%	11%
CORRECT → *OVER*	*UP*	13%	13%	33%	10%	10%
CORRECT → *UNDER*	*DOWN*	6%	6%	9%	5%	2%
OVER → *UNDER*	*DOWN*	7%	6%	11%	5%	5%

Firms are classified into three valuation regimes for year $t-1$ and year t, respectively: undervalued (*UNDER*), correctly valued (*CORRECT*), and overvalued (*OVER*). Firms are defined as being overvalued (undervalued) if both principal components of overvaluation (*OVE1* and *OVE2*) are in the top (bottom) two quintiles. Correctly valued firms are those with both principal components in the middle quintile. "Valuation Regime Change" designates the shift in valuation over time from year $t-1$ ("Year $t-1$") to year t ("Year t"). "Shift" includes increases in valuation (*UP*) and decreases in valuation (*DOWN*), respectively, from year $t-1$ to year t. Acquisition activities are measured for year $t+1$ and include the following statistics: "% Higher $ Acq." is the percentage of firms with greater dollar amount of acquisition in year $t+1$ than in year t; "% More # Acq." is the percentage of firms with greater number of acquisition in year $t+1$ than in year t; "% With Acq." is the percentage of firms with acquisition in year $t+1$; "% No Acq. → Acq." is the percentage of firms with acquisition in year $t+1$, but no acquisition in year t; and "% Impairment" is the percentage of firms with goodwill impairment in subsequent years.

undervalued (*UNDER*), correctly valued (*CORRECT*), or overvalued (*OVER*). Firms are classified as undervalued (overvalued) if they fall into the first two quintiles (the last two quintiles) of the main diagonal of the 5×5 classification of firms by quintiles of the two overvaluation composite indicators, *OVE1* and *OVE2* (see Section III for details). Correctly valued firms are those in the middle quintile of the main diagonal. We identify a shift in the valuation regime by comparing the firm's valuation classification in year t with that of year $t-1$. Shifts in valuation regimes from year $t-1$ to year t can take multiple paths. We are particularly interested in the four paths reported in Table 8. These are the two upward (*UP*) shifts from undervaluation and correct valuation to overvaluation (denoted *UNDER* → *OVER* and *CORRECT* → *OVER*), and the two downward (*DOWN*) shifts from correct and overvaluation to undervaluation (*CORRECT* → *UNDER* and *OVER* → *UNDER*). For the shifting firms, we compute the following statistics on acquisition activity during year $t+1$ (the year following the shift) and for subsequent goodwill write-off: (1) the percentage of firms with a larger dollar amount of acquisitions in year $t+1$ than in year t (% Higher $ Acq.), (2) the percentage of firms with a larger number of acquisitions in year $t+1$ than in year t (% More # Acq.), (3) the percentage of firms with acquisition activity in year $t+1$ (% With Acq.), (4) the percentage of firms with acquisition activity in year $t+1$, but no acquisition activity in year t (% No Acq. → Acq.), and (5) the percentage of firms with goodwill write-off (% Impairment).

Table 8 reveals that upward shifts in share valuation (*UP*) are associated with larger increases in acquisition activity than are downward shifts (*DOWN*). For example, of the firms going through the upward path *CORRECT* → *OVER* from year $t-1$ to year t (second row), 13 percent experience increases in acquisition intensity, both in dollar value and number of acquisitions (% Higher $ Acq. and % More # Acq.) relative to the previous year, whereas only 6 percent of the downward-shifting firms experience increases in acquisition activity. Of the upward-moving firms, 33 percent engage in acquisition activity in the following year, and 10 percent are new to the acquisition arena (No Acq. → Acq.), compared with 9 percent and 5 percent, respectively, for the down-movers. The same relative patterns characterize the *UNDER* → *OVER* versus *OVER* → *UNDER* shifts.

Table 8 reports in the right column the association between temporal shifts in share overpricing and subsequent goodwill write-offs. The write-off frequencies associated with the upward shifts in overpricing, 11 percent and 10 percent, are substantially (and statistically significantly) larger than the write-off frequencies associated with downward moves in overpricing, 2 percent and 5 percent.

We perform Chi-square (χ^2) tests to examine whether firms with share valuation increases (*UP*) are more likely to have increases in acquisitions and write-offs than are firms with decreases in share valuation (*DOWN*). In these tests, we use indicator variables (1/0) to distinguish between: (1) firms with increases in acquisition in year $t+1$ from firms with no increase in acquisitions, (2) firms undertaking acquisition in year $t+1$ from firms without acquisitions in $t+1$, and (3) firms with subsequent write-offs and those without write-offs. In all tests, the χ^2 statistics are statistically significant at the 0.001 level. These time-series tests, thus, corroborate the cross-sectional findings reported in Tables 3 and 4 about the strong relation between share overpricing on the one hand and acquisition intensity and goodwill write-offs on the other.[29]

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[29] Our second time-series test follows Polk and Sapienza (2009). Specifically, we regress the change in the amount of goodwill from year t to year $t+1$ on three independent variables: (1) the change in our first overpricing indicator (*OVE1*) from year $t-1$ to year t, (2) the change in our second overpricing indicator (*OVE2*), and (3) the "abnormal" amount of goodwill in the previous year, t, as control. Similar to Polk and Sapienza (2009), we define the firm's abnormal goodwill in year t as the difference between the firm's amount of goodwill and the median goodwill of the firm's four-digit SIC industry in year t. Our main interest is in the first two independent variables, the overpricing indicators. We, indeed, find positive and statistically significant coefficients (untabulated) for both overpricing indicators, confirming our evidence concerning Question 1 (e.g., Table 3) in a time-series context.

VII. CONCLUDING COMMENTS

This study establishes that a major cause of goodwill write-offs—a fast-increasing phenomenon—is the overpriced shares of buyers at acquisition. Share overpricing provides managers with strong incentives to exploit mispricing by using inflated shares for acquisitions, sometimes overpaying for the target. Such overpayment is the harbinger of subsequent write-offs.

We document a strong positive association between share overpricing on the one hand and subsequent acquisition intensity and goodwill growth on the other. Effective corporate governance tempers these managerial incentives. We then show that bidders' overpricing is strongly associated with goodwill write-offs and, moreover, that overpricing predicts both the occurrence of goodwill write-offs and their magnitude, a finding of importance to auditors in the context of testing for goodwill impairment. Further, despite frequent claims by managers that a goodwill write-off is just a byproduct of a rational use of overpriced shares to acquire sometimes overvalued targets, we show that such write-offs are a very consequential event, calling for a reassessment of the firm's investment strategy.

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The Choice of Different Types of Subjectivity in CEO Annual Bonus Contracts

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ABSTRACT: In assessing the performance of the CEO, subjectivity by the board of directors is often present in one form or another. We specifically focus on: (1) the *ex ante* option to *ex post* override a formula-based contract ("discretionary bonus"), and (2) the *ex ante* absence of any formula in a contract ("subjective weights"). We argue that the two types of deviations are driven by different contracting problems, which relate to whether post-contract information does or does not affect the agent's optimal action choice. We refer to these different contracting problems as problems of risk and problems of noncongruity, respectively, and hypothesize that discretionary bonuses are used for risk-reduction purposes, while subjective weights on different performance dimensions are used for congruity-improvement purposes. Our results are consistent with our expectations, showing that the use of the different types of subjectivity is consistent with optimal contracting considerations.

Keywords: *board discretion; optimal contracting; bonus contracts; corporate governance.*

Data Availability: *All data are publicly available from the sources identified in the text.*

I. INTRODUCTION

The objective of this study is to examine the choice of subjectivity in CEO annual bonus contracts. Although the annual bonus represents a small fraction of a CEO's total monetary compensation, it reflects the performance assessment by the board of directors of the CEO (Hayes and Schaefer 2000). Understanding the way in which boards assess the performance of the

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CEO is important because one of the primary functions of the board of directors is to perform their monitoring role, i.e., to hire, regularly evaluate, and, if necessary, fire the CEO (The Business Roundtable 1990; Lipton and Lorsch 1992).[1]

In assessing the performance of the CEO, subjectivity by the board of directors is often present in one form or another. In observed business practices, there are multiple examples of important subjective components, such as CEOs being evaluated on non-quantified aspects of the job or boards subjectively deciding on how observed performance will be translated into rewards. We focus on the latter form of subjectivity and in particular on the following specific types: (1) the *ex ante* option to *ex post* override a formula-based contract, which we label discretionary bonus, and (2) the *ex ante* absence of any formula in a contract, which we label subjective weights. We address the question of what motives boards have, in terms of contracting problems, to deviate from a formula-based contract and whether the two types of deviations are driven by different motives.

Previous studies provide little evidence on the extent to which subjectivity is driven by economic determinants. Theory indicates that subjectivity should be most important when factors such as noise in performance measures and environmental unpredictability are high, but evidence in favor of these arguments is lacking. For example, Gibbs et al. (2004) find no relationship between the use of subjectivity and survey-based measures of noise and environmental unpredictability. Similarly, Murphy and Oyer (2003) fail to find any relationship between discretion in incentives and stock return volatility. We argue that this lack of evidence is at least partly driven by lumping together all types of subjectivity. At first sight, this "lumping" might not be seen as problematic when the focus is on deviations from a formula-based contract. Regardless of whether there is an *ex post* overriding of a formula or the *ex ante* absence of a formula, in both cases there is *ex post* no formula. However, this ignores an important subtlety in *ex ante* contract design that relates to uncertainty that does not affect the agent's optimal action choice versus uncertainty that does. We refer to these different contracting problems as problems of risk and problems of noncongruity, respectively.

In designing incentive contracts, there are two important considerations: the risk premium to be paid to a risk-averse agent and the extent to which the contract achieves goal congruence between the principal and agent. If the principal implements a diverse set of performance measures, then an important contracting problem is how to weight the different dimensions to assure congruity with the principal's gross payoff. One of the choices that needs to be made in this respect is whether to fix the weights in a formula-based contract or to keep the weights implicit *ex ante* (Ittner et al. 2003). This choice crucially depends on whether relevant pre-decision information will be observed after the contract has been signed. In the absence of any pre-decision information, the agent's optimal course of action can be determined *ex ante* and it is optimal to fix the weights and design a formula-based contract, assuming that subjectivity entails some cost. One benefit from keeping the weights *ex ante* implicit comes from the fact that post-contract but decision-relevant pre-decision information can be incorporated in rewarding the CEO using subjective weights. Whether these subjective weights are preferred over a formula depends on how prevalent the informational advantage is. We posit that the informational advantage is more prevalent the less predictable the environment, because increased unpredictability makes it more difficult to establish the optimal course of action *ex ante*. We thus expect that the probability of using subjective weights is positively associated with environmental unpredictability.

The second contracting problem is one of risk (Feltham and Xie 1994). This risk relates to random shocks to performance that cannot and/or should not affect the agent's actions and, thus, results in noisy measures of performance. The use of noisy performance measures in the contract requires a risk premium to be paid to the risk-averse agent. In this case, the principal can apply subjectivity to adjust for the effect of uncontrollable factors through the use of discretionary bonuses, allowing for increased incentives through a reduction in the risk premium. The benefits of such adjustments are higher for noisier performance measures, such that we expect that the probability of using discretionary bonuses in the contract is positively associated with performance measure noise, again assuming that subjectivity comes at some cost.

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[1] In addition, an analysis of CEO performance assessment allows for a better understanding of incentives because it is very likely that the assessment affects other, high-powered incentive components, such as equity grants and the likelihood of CEO turnover.

Despite the above-mentioned benefits, there are also problems associated with the use of subjectivity, which explains why we do not observe all firms using subjectivity. Some of the problems relate to the mere use of subjectivity such as reneging, favoritism, and bias (e.g., Baker et al. 1994; Prendergast and Topel 1996; Moers 2005). Other problems relate to the extent to which the benefits of subjectivity can be exploited, which is the focus of our study. We argue that the ability to exploit the benefits of subjectivity depends on the ability of the board to accurately interpret the signals they observe. The less the board emphasizes their monitoring role, which we label monitoring intensity, the less able is the board to interpret what they observe and thus the less likely subjectivity will improve incentive contracting. As a result, we expect the effect of noise (environmental unpredictability) on the use of discretionary bonuses (subjective weights) to be moderated by the monitoring intensity of the board of directors.

To test our predictions, we use an extensive dataset based on compensation contract information manually retrieved from SEC proxy statements. The data provide us with information on the performance measures specified for deriving annual bonuses and whether their application in the compensation decision is regulated formulaically or (also) allows for subjectivity. Given the leeway that firms have in disclosing details about the evaluation and compensation decision, we are careful in coding the proxy statements. In particular, we separate observations into those that explicitly state the use or non-use of a certain type of subjectivity and those that remain vague, and we take these differences into account in our analysis.

In testing the choice of discretionary bonuses, we initially focus on explicit contracts that are based solely on financial performance measures. This decision is driven by the availability of a proxy for noise in financial measures and the lack of such a proxy for other possible performance measures. In line with expectations, we find that the option to use discretionary bonuses is positively related to the noise in financial performance measures. Further, when comparing contracts based on financial measures only to contracts based on both financial and nonfinancial measures, we find that discretionary bonuses are used less in these latter contracts. This finding is consistent with our expectation that adding performance measures has risk-reduction effects, reducing the need for discretionary bonuses. We find further that the use of subjective weights in contracts based on both financial and nonfinancial performance measures is positively associated with environmental unpredictability. Finally, we find that monitoring intensity of the board of directors increases the effect of noise (environmental unpredictability) on the use of discretionary bonuses (subjective weights). The inclusion of control variables, additional analyses, and numerous robustness checks corroborate the above findings.

A recent study by Ederhof (2010) also examines one component addressed here, i.e., discretionary bonuses. She examines variables that affect the *ex post* payments of discretionary bonuses and limits her analysis to this specific type of subjectivity. Our study is fundamentally different from hers in that we focus on *ex ante* contract design and the determinants of including different types of subjectivity in these contracts. The research question of our paper, i.e., why firms use different types of subjectivity, is neither (intended to be) addressed by Ederhof (2010) nor can her results shed light on this question.

This study contributes to the literature in several interrelated ways. Despite the prevalence of subjectivity, there is only limited empirical evidence on the relevance of theoretically important economic determinants of its use. We argue that previous empirical research in this particular area has ignored the difference between uncertainty that does not affect the agent's action (noise) and uncertainty that does (unpredictability). We contribute to the literature by showing that this distinction is theoretically and empirically important, and can explain the mixed evidence in previous studies. Further, most previous empirical studies examine the existence of or extent to which subjectivity is present without distinguishing between different types of subjectivity (Murphy and Oyer 2003; Gibbs et al. 2004; Ederhof 2010).[2] In a similar vein, even though previous research states that there are different types of benefits to using subjectivity (Murphy and Oyer 2003), no attempt has been made to disentangle these benefits. We contribute to the literature by conceptually and empirically showing that different types of subjectivity create different types of benefits, as they are linked to different information and contracting problems. Finally and more generally, we contribute to the literature by providing evidence that economic arguments underlie the use of subjectivity in annual bonus contracts. Consistent with the optimal contracting perspective, we show that boards use subjectivity to resolve contracting problems and that this is more likely the greater their monitoring intensity.

In Section II, we discuss the theory and develop hypotheses. Section III describes the sample selection and variable measurement, and Section IV discusses the empirical tests and results. Section V concludes.

II. THEORY AND HYPOTHESES

Subjectivity and the Timing and Decision-Relevance of Post-Contract Information

The incentive-contracting literature identifies several ways in which subjectivity can be applied (Baker et al. 1994; Ittner et al. 2003; Gibbs et al. 2004). Despite this variety, previous empirical research has examined subjectivity either by lumping together different types of subjectivity or by focusing on only one specific type. In contrast to previous research, we focus on subjectivity in the form of deviations from a formula-based contract. In particular, we focus on (1) the *ex ante* option to *ex post* override a formula-based contract ("discretionary bonus") and (2) the *ex ante* absence of any formula in a contract ("subjective weights").[3] In terms of contract design, the two deviations from a formula-based contract can be captured in the following way:

$$s_0(\cdot) = w + \sum_{i=1}^{n} \beta_i OPM_i \qquad \text{(Contract } s_0\text{)}$$

$$s_1(\cdot) = w + \sum_{i=1}^{n} \beta_i OPM_i - D(\cdot) \qquad \text{(Contract } s_1\text{)}$$

$$s_2(\cdot) = w + \sum_{i=1}^{n} \beta_i(\cdot) OPM_i, \qquad \text{(Contract } s_2\text{)}$$

where *OPM* are objective performance measures, w is a fixed wage, β_i is the explicit incentive weight on objective performance measure i, $D(\cdot)$ is the (option to use) discretionary bonuses, and

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[2] See Moers (2005) for an exception.

[3] We acknowledge that there are other forms of subjectivity such as explicit incentives on subjective judgments or the use of subjectivity to adjust performance standards. As such, we only examine a subset of all different types of subjectivity. However, we specifically focus on these two types of subjectivity because they have clearly different conceptual implications, as we argue next.

$\beta_i(\cdot)$ is the subjective incentive weight on objective performance measure i. Contract s_0 represents the baseline formula-based contract, while Contract s_1 and s_2 represent the above-described deviations (1) and (2), respectively. We separate these two deviations because we argue that each addresses a different contracting problem. As a result, lumping them together is unlikely to provide theory-consistent results.

The similarity between contracts of type s_1 and type s_2 is that *ex post* pay is not (necessarily) determined using a pre-specified link with performance. The major difference between these types of contracts, however, is that *ex ante* s_1 does specify such a link, while s_2 does not. To explain the importance of this difference, we emphasize three relevant assumptions that underlie contract theory: (1) the agent's effort decisions are driven by rational expectations that result from the *ex ante* design of contracts; (2) because of problems of reneging, favoritism, and bias (Baker et al. 1994; Prendergast and Topel 1996; Moers 2005), subjectivity always entails some cost, such that there must thus be a specific benefit before its use is preferred; and (3) post-contract, post-decision information has different contracting implications than post-contract, (decision-relevant) pre-decision information, where pre- and post-decision relates to the agent's effort decision.

The first assumption implies that, given that contracts of type s_1 *ex ante* specify a link between pay and performance and thus effort, s_1 explicitly directs attention and provides much more structure on the agent's effort decisions than s_2. The second assumption implies that, given the *ex post* "similarity" between s_1 and s_2, there must be a specific benefit related to not providing much structure on the agent's effort decision *ex ante* before the use of s_2 is preferred. The third assumption reveals what this benefit might be. That is, determining the optimal course of action and thus providing structure on the agent's effort decision is more problematic in the presence of decision-relevant pre-decision information than in the presence of post-decision information. In the following subsections, we develop our hypotheses by discussing the contracting implications of differences in the timing and decision-relevance of post-contract information.[4]

Subjectivity and Noise

One of the core contracting problems is the risk premium to be paid to a risk-averse agent. This problem centers on the noise in the performance measures used in the contract, which imposes risk on the agent for which he needs to be compensated. The impact of uncontrollable factors on performance (i.e., noise) is a typical example of post-contract information that is post-decision and/or decision-irrelevant.

The analytical literature indicates that supervisor discretion can be a solution to the noise inherent in objective performance measures. For example, Baker et al. (1994) show that contracts written on a noisy objective measure can be improved if the principal has unverifiable information about actual noise realizations and subjectively determines compensation based on that signal.[5]

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[4] For completeness, it is important to note that while we expect different responses for different types of post-contract information, these responses are in no way mutually exclusive. As a result, our hypotheses do not hinge in any way on the assumption that boards observe, for example, either post-decision information or pre-decision information.

[5] In Baker et al. (1994), any post-contract information that is revealed to the agent and/or principal is not decision-relevant, in the sense that it does not change the optimal course of action. This is the definition of noise used in the literature, as well as in our study, and indicates that their analysis of subjectivity centers on correcting distortions driven by noise. Further, Baker et al. (1994) analyze two different ways in which this can be done: (1) supervisor's subjective assessments of the agent's action and (2) supervisor's subjective assessments of the noise realization. The former is not of interest to our study, while the latter is. Although Baker et al. (1994) label the latter type "subjective weights on objective performance measures," the associated optimal contract equals our contract s_1, not contract s_2. The existence of an explicit weight on the objective performance measure is a crucial component for making optimal *ex post* subjective adjustments for noise (Baker et al. 1994, 1152).

Boards gain knowledge about uncontrollable and *ex ante* non-contractible events that occur during the measurement period and that impact performance. If the board conditions rewards on this knowledge, then the board can reduce the CEO's compensation risk and improve contracting.

Discretionary bonuses allow the board to condition rewards on their knowledge of noise realizations and reduce risk by overriding a formula-based contract *ex post* based on this knowledge. Contract s_1, i.e., $w + \sum_{i=1}^{n} \beta_i OPM_i + D(\cdot)$, is therefore suitable to take into account this form of post-contract, decision-irrelevant information (cf. Baker et al. 1994). Contract s_2 (i.e., $w + \sum_{i=1}^{n} \beta_i(\cdot) OPM_i$) also allows the board to take into account performance measure noise by subjectively weighting the performance measures *ex post*. However, as Baker et al. (1994) show, the explicit component inherent in contract s_1, but absent in contract s_2, is crucial for reducing the principal's temptation to renege and making subjectivity optimal. Furthermore, absent reneging issues, contract s_2 adds a costly subjective component by making the link between compensation and performance, and thus effort, *ex ante* undefined. Whenever post-contract information does not impact the optimal course of action, as is the case with performance measure noise, the benefit of removing an *ex ante* link between pay and performance is zero. As a result, discretionary bonuses are preferred over contracts with subjective weights for the purpose of risk reduction.[6]

Although discretionary bonuses are the preferred deviation from a formula-based contract for the purpose of risk reduction, this risk-reduction benefit might be offset by an increase in risk caused by problems of reneging, favoritism, and bias (Baker et al. 1994; Prendergast and Topel 1996; Moers 2005). Given this costly use of subjectivity, discretionary bonuses are more likely to be preferred as a contracting tool the greater the benefits of reducing performance measure noise. The premise that greater benefits from discretionary bonuses derive from noisier measures motivates the following hypothesis.

> **H1:** The option to use discretionary bonuses is positively related to the noise in performance measures.

Subjectivity and Unpredictability

The second core contracting problem in designing incentive contracts is achieving goal congruence. A critical issue when contracting on multiple, diverse measures is how to weight these measures (Banker and Datar 1989; Ittner et al. 2003). *Ceteris paribus*, the principal prefers a weighting scheme that minimizes distortions and makes the overall performance evaluation of the agent congruent with the principal's objective. Most previous studies in the incentive area focus on the determinants of the explicit (relative) weights on different performance dimensions, including subjective judgments (e.g., Bushman et al. 1996; Ittner et al. 1997; Murphy and Oyer 2003). Instead, we focus on the problem that the principal has to decide to either use an objective, formulaic approach or leave the incentive weights on different performance dimensions open to *ex post* determination.

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[6] Another alternative to the use of discretionary bonuses to reduce risk is to use a formula-based contract and include an explicit weight on the board's subjective assessment of the noise realizations. The cost of using subjectivity in this way is exactly the same as using discretionary bonuses, assuming that the board reveals the same subjective assessment in both cases. The only difference between the two contracts is that the formula-based contract fixes the bonus adjustment, while discretionary bonuses provide the *option* to adjust. The option to adjust is valuable to meet the CEO's reservation wage when his outside employment opportunities are associated with uncontrollable changes in the market (Oyer 2004; Rajgopal et al. 2006). In order for a formula-based contract to be able to mimic this option, the board would need to distort their subjective assessment, thereby signaling reneging issues. As a result, discretionary bonuses are preferred for the purpose of risk reduction, as the non-negative value of the option to adjust is not only included, but also does not require the board to distort their subjective assessment.

While a formula-based contract avoids problems that can result from *ex post* subjective evaluations, the rigidity of this approach can be problematic in unpredictable environments. Fixing the weights *ex ante* provides incentives for behavior that are not adaptive to changes in the environment. This is effective when the optimal course of action is known *ex ante*, i.e., when post-contract information should not affect the agent's actions. It causes problems in fast-changing, unpredictable environments in which there is a high likelihood that post-contract information is decision-relevant and responsive actions by the agent are thus needed (Demsetz and Lehn 1985).[7] As a result, in an unpredictable environment, the agent needs to take actions that are value-enhancing but unknown *ex ante*, which creates a demand for an incentive system that induces situation-specific adaptive behavior.

The use of subjectivity in weighting different performance dimensions *ex post* allows for this adaptive behavior. The board can, in its weighting decision, incorporate the agent's relevant pre-decision information that the board observes after the contract has been signed. Accordingly, the agent has incentives to similarly incorporate this pre-decision information in his action choice in a congruent way. In sum, the benefits of flexibility in using multiple, diverse measures to derive compensation are high when boards know the dimensions of performance but are unable to predict which underlying CEO actions will affect firm value during the fiscal year. This reasoning motivates the following hypothesis.[8]

H2: The use of subjective incentive weights is positively related to environmental unpredictability.

Subjectivity and Monitoring Intensity

The use of subjectivity in incentives provides the principal with the opportunity to let her personal preferences play a role in the compensation decision. As such, the mere use of subjectivity is costly. Even if the principal is honest, however, subjectivity can be problematic. These problems relate to factors that limit or destroy the potential benefits of subjectivity. The benefits of subjectivity hinge on the accuracy of the principal's observed unverifiable signal; the lower the accuracy of this signal, the lower the benefits of using it to resolve contracting problems (Baker et al. 1994).

By its very nature, unverifiable information is not readily available in information systems and automatically processed. The ability to adequately incorporate this information in compensation decisions thus depends on how close the board monitors the firm. In particular, less intense board monitoring increases the probability that unverifiable performance data are incorrectly interpreted.[9] That is, a board that is characterized by a low monitoring intensity is less likely to interpret unverifiable signals correctly. This implies that the board can misinterpret noise realizations and make discretionary payments that do not adjust for uncontrollable effects and thus do not reduce risk. In a similar vein, the board might misinterpret observed decision-relevant pre-decision information and choose incentive weights that are inconsistent with the optimal action choice.

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[7] Strictly speaking, unpredictability in the environment is expected to affect both the information structure and production function. That is, in unpredictable environments there is a higher likelihood of uncertainty affecting the marginal product of different types of effort and that the agent observes the realization of this uncertainty before effort provision.

[8] Given the arguments provided, any contract that includes an *ex ante* link between compensation and different dimensions of performance, and thus effort, cannot be preferred over subjective weights when the purpose is to promote adaptive behavior.

[9] Note that more/less intense monitoring refers to the board's effort on one of its primary tasks, i.e., regularly evaluate, determine compensation, and if necessary fire the CEO. The term monitoring as used here should thus not be confused with its use in the analytical literature where it refers to action observability, which is a substitute for incentives based on output (e.g., Holmstrom 1979).

This link between the ability to capture unverifiable information and monitoring implies that it is optimal for a board with lower monitoring intensity to prefer verifiable information and thus deemphasize the use of unverifiable information (Petersen and Rajan 2002). In other words, under rational expectations, the above problems are taken into account in the *ex ante* contracting choice, which implies that an increase in noise (environmental unpredictability) is more likely to lead to the use of discretionary bonuses (subjective weights) as the monitoring intensity of the board increases. This reasoning motivates the following two hypotheses.

H3a: The relationship between the option to use discretionary bonuses and noise in performance measures is more positive the higher the monitoring intensity of the board.

H3b: The relationship between the use of subjective incentive weights and environmental unpredictability is more positive the higher the monitoring intensity of the board.

III. SAMPLE SELECTION AND VARIABLE MEASUREMENT

Sample Selection

Our analysis is based on CEO incentive contracts described in the compensation section of SEC Proxy Statements (DEF 14a). Proxy statements not only provide information about specified performance measures, but also whether boards of directors apply them in a formula or with subjective flexibility to derive compensation at the end of a fiscal year. We make use of a dataset that was compiled as part of a larger project on incentive contracting and in which the current study was one of the topics. Our sample consists of publicly listed firms included in Execucomp without a change in the CEO position in the period from 1998 to 2002. We obtain an initial sample of 2,895 observations for 579 firms across the five years.

The full sample reduces to 2,575 observations due to three sources of missing compensation-related information: lacking proxy information (63), companies not administering annual incentive programs (127), and missing indication of performance measures (130). We merge the remaining observations with stock market and financial statement data obtained from Compustat and CRSP, further reducing the sample to 2,073 observations due to missing information. Finally, missing boards of directors' information leads to the loss of additional 320 observations, resulting in a final sample size of 1,753, for 424 firms across five years in 11 different industries, as classified by two-digit SIC code.

To be able to test our hypotheses, we have to take into account two empirical research method issues. First, we hypothesize that the use of discretionary bonuses is associated with noise in the performance measures used in the contract. Unfortunately, we are unable to test such a general hypothesis because it is empirically impossible to get noise measures for all possible performance measures. Given the availability of a proxy for noise in financial measures and the lack of such a proxy for other possible performance measures, we (initially) focus on a subsample of firms that contract only on financial measures to test H1 and H3a. Second, the majority of the proxy statements only provide information about the weighting decision related to dimensions of performance rather than individual measures of performance. That is, they provide information about how financial versus nonfinancial measures are weighted. In testing H2 and H3b, we therefore focus on a subsample of firms that contract on both financial and nonfinancial measures to examine the use of subjective weights on these performance dimensions.

To develop the subsamples of interest, we divide the sample into three subsamples based on the dimensions of performance used, which we label *FINANCIAL*, *DIVERSE*, and *NONFINANCIAL*. The *FINANCIAL* sample contains those observations for which the board bases (the explicit part of) the bonus entirely on financial performance measures. This sample (n = 812) is derived by focusing on financial measures that are earnings-based and/or revenue/cost-based, as well as the indicators for financial measures being the only measures used (e.g., "exclusively," "solely," and "only").[10] The *DIVERSE* sample encompasses contracts in which boards employ a combination of financial and nonfinancial measures (n = 912).[11] Finally, the *NONFINANCIAL* sample contains contracts based on the sole use of the previously mentioned nonfinancial indicators—i.e., no use of financial performance measures (n = 29).

Measuring Board Subjectivity

Our main research interest lies in board motives to deviate from a formula-based contract through the use of two different types of subjectivity: discretionary bonuses and subjective weights. Of particular importance is the identification of the use of discretionary bonuses and the use of subjective weights. To determine these variables, all individual proxy statements were separately read by both authors and by a research assistant. There were only a small number of differences in the classifications (approximately 5 percent of the sample), all of which were discussed and subsequently resolved.

We code the (non-) use of discretionary bonuses for the full sample and the (non-) use of subjective weights for the subsample *DIVERSE*. A potential limitation of using proxy statements for identifying the use of the two types of subjectivity is that firms are not required to disclose all the details. This limitation turned out to be only relevant to the disclosure of the incentive weights when multiple performance dimensions are used. That is, firms might have explicit weights but do not disclose these because they are not required to do so. To circumvent this problem, we separate the observations in the *DIVERSE* subsample into those that *explicitly* state the use or non-use of subjective weights (n = 578) and those observations that remain vague (n = 334).

Table 1 presents descriptive statistics of the two types of subjectivity for each of the three subsamples (if relevant), while Appendix A provides excerpts of proxy statements for illustrative purposes. We observe the option to use discretionary bonuses in 334 instances. Of the contracts that disclose this option, 24.25 percent actually exercise this option *ex post* in making upward adjustments. This percentage is an underestimate of the actual exercise of subjectivity if firms explicitly disclose when they make upward adjustments but refrain from doing so when they make downward adjustments.[12] We further observe the use of subjective weights in 419 instances. In 334 instances, we are unable to identify whether the firm uses explicit weights or subjective weights in determining CEO compensation.

Slightly less than half of the observations relate to the sole use of financial performance measures (n = 812), approximately 74 percent of which are without discretionary bonuses (n = 600) and 26 percent with discretionary bonuses (n = 212). The combination of financial and nonfinancial measures is observed in a little over half of the full sample and, within these observations, approximately 17 percent relate to the use of explicit weights (n = 159), 46 percent to the use of subjective weights (n = 419), 37 percent remain unidentified regarding the incentive weights (n = 334), and 13 percent are with discretionary bonuses.

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[10] Out of the 812 observations, 717 (88 percent) relate to the sole use of earnings-based measures, while 95 (12 percent) relate to the use of (also) revenue/cost-based measures. The results presented in this paper become stronger when restricting the *FINANCIAL* sample to only the 717 observations related to the sole use of earnings-based measures.

[11] Examples of such nonfinancial measures are "Quality," "Efficiency," "Customer Satisfaction," "New Product Development," "Leadership," and "Strategic Positioning."

[12] This observation signals that using *ex post* measures of subjectivity (e.g., Ederhof 2010)—i.e., focusing on the exercise of discretion, can be problematic when examining the choice of subjectivity in incentive contracts.

TABLE 1

Overview of Contracts Observed Based on Dimensions of Performance, Discretionary Bonuses, and Subjective Weights

Sample	Performance Dimensions Used	Discretionary Bonuses	Subjective Weights	Number of Obs.	Number of Firms
FINANCIAL	Financial only	No	—	600	167
		Yes	—	212	66
DIVERSE	Financial + Nonfinancial	No	No	140	53
		Yes	No	19	9
		No	Yes	349	98
		Yes	Yes	70	24
		No	?	307	86
		Yes	?	27	14
NONFINANCIAL	Nonfinancial only	No	—	23	9
		Yes	—	6	2
Total # of observations		1,419 No 334 Yes	159 No 419 Yes 334 ?	1,753	

In addition to variability in contracts across firms, we also observe firms changing contracts (see Appendix A for excerpts of proxy statements). Of the 424 firms, 97 firms (22.88 percent) change their incentive contract during the sample period, with some firms making multiple changes. In particular, 24 firms change between being vague and being explicit about the (non-) use of subjective weights, while 73 firms change the use of performance measures, the use of discretionary bonuses, and/or the use of subjective weights.

Dependent Variables

To test our hypotheses, we define binary variables for the use of discretionary bonuses and the use of subjective weights.[13] We measure *DISCR_BON* as an indicator variable that takes on the value 1 if we observe the option to use discretionary bonuses, and 0 otherwise. In the subsample *DIVERSE*, we measure *SUBJ_WEIGHTS* as an indicator variable that takes on the value 1 if boards leave relative weights on financial and nonfinancial measures implicit, and 0 otherwise.

Independent Variables

Exogenous Noise

Noise refers to the variance in the performance measure that is driven by factors outside the control of the agent. We measure *NOISE* based on the historical variance in the median three-digit industry accounting returns (cf. Ittner et al. 1997). We include the variance of ROA, ROE, and ROS over five years preceding the proxy data. Principal component analysis reveals one factor with an eigenvalue greater than unity. We use that factor score as the measure of noise.

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[13] Our study is about contract design and therefore the *ex ante* incorporation of subjectivity. We include binary variables instead of measures of "magnitude" because *ex ante* the magnitude of discretionary bonuses and subjective weights are unknown by their very nature. Examining the magnitude of discretionary bonuses would imply an examination of a specific exercise of discretion, something we show is problematic (see footnote 12). Regarding subjective weights, there is an additional problem in the sense that the "magnitude" of the weights, i.e., the actual *ex post* subjective weights, is never observed.

Environmental Unpredictability

Following Demsetz and Lehn (1985) and Core and Guay (1999), we proxy for the degree of environmental unpredictability with a measure of return volatility. Given that the stock price reflects expectations, the volatility in returns is driven by changes in expectations and, thus, the greater the volatility, the less predictable the environment. Of particular importance are the changes in expectations regarding the CEO's actions, which are specific to the firm. For this reason, we focus on idiosyncratic risk, measured by the standard deviation of the residuals from a market-model regression. For each firm, we regress the firm's monthly stock returns on the CRSP value-weighted index estimated over a period of 12–60 months prior to the proxy data. We subsequently calculate the firm-specific standard deviation of the residuals to arrive at our measure *UNPREDICTABILITY*.

Monitoring Intensity

There is a large stream of literature on the monitoring role of the board of directors. We follow this literature to develop our measure of monitoring intensity. While the compensation committee designs the CEO's contract and decides whether to allow subjectivity, it is the entire board that ratifies the compensation committee's recommendations and also has the fiduciary duty to monitor the CEO. Furthermore, recent empirical evidence shows that board-level attributes are more important than (compensation) committee-level attributes in compensation decisions (Chhaochharia and Grinstein 2009). We therefore measure monitoring intensity at the level of the board and thus examine to what extent the compensation committee takes into account the monitoring intensity of the board when deciding on the use of subjectivity. We measure the monitoring intensity of the board of directors by computing a factor score including board size, the proportion of busy outside directors, and the proportion of busy inside directors. Our rationale for including these items is that there is a general consensus in the literature that the time, coordination, and dialogue needed for subjectivity to be correctly applied are negatively associated with these items (e.g., Core et al. 1999; Coles et al. 2008). It is important to note that we make no claim that board size and the proportion of busy outside/inside directors are (inverse) measures of good corporate governance or better boards.[14] Rather, we assert that these board characteristics reflect monitoring intensity, which affects the preference for using unverifiable information (Petersen and Rajan 2002).

Board size is presumed to be associated with a lack of dialogue, high coordination costs, and difficulty in reaching consensus (Lipton and Lorsch 1992; Jensen 1993). The more difficult it is to reach consensus, the more likely it is that subjectivity will be based on inaccurate signals. We include the proportion of busy outside directors (i.e., directors with three or more directorships) and busy inside directors (i.e., directors with two or more directorships), as they often adopt a "one solution fits all" approach to exerting corporate control (Core et al. 1999), which hinders the interpretation of unverifiable information specific to the firm.[15] This approach is detrimental to the use of subjectivity because it lowers the ability of directors to correctly interpret unverifiable performance data and hence will lead to assessments based on inaccurate signals.

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[14] For example, even though there is consensus in the literature that more monitoring takes place when boards are smaller rather than larger, there is no consensus that smaller boards are better. Recently, the empirical literature on board of directors has started to emphasize that the board can fulfill alternative roles (e.g., Fich 2005; Coles et al. 2008). Next to the monitoring role, the board can also fulfill an advisory role and larger boards might be particularly suited for this role (Coles et al. 2008). We return to these alternative roles in a subsequent section on additional analyses and robustness checks.

Principal component analysis reveals one factor with an eigenvalue greater than unity. As monitoring intensity decreases with these measures, we multiply the factor score with −1 to make sure that higher values of *MONIT_INTENS* imply *more* intense monitoring.

Control Variables

In the analysis of the determinants of the choice of discretionary bonuses, we control for firm size, the relative power of the CEO over the board of directors, industry, and year. We include firm size as proxy for the difficulties of monitoring an agent (e.g., Bushman et al. 1996) and we measure firm size by the natural logarithm of firm sales measured in millions of dollars (*FIRM_SIZE*). We make no directional prediction with regard to the effects of firm size on the decision to use subjectivity.

We further control for the possibility that CEOs possessing power over the board of directors prefer contracts that are not administered by a formula and are consequently less transparent to outsiders. Proponents of the managerial power theory claim that such contracts are examples of rent extraction (e.g., Bebchuk et al. 2002). This view has also been expressed in the press (e.g., Morgenson 2006). In essence, CEOs can exercise their influence and force a performance assessment for bonus determination that reflects a favorable picture of their actions during the measurement period. We compute the CEO power measure (*CEO_POWER*) as a three-item factor score including an indicator variable for CEO duality, the proportion of outside directors appointed by the CEO, and the proportion of inside directors appointed by the CEO.[16] Principal component analysis reveals one factor with an eigenvalue greater than unity.

In the analysis of the determinants of the use of subjective weights, we control for CEO equity incentives in addition to controlling for firm size and CEO power. Murphy and Oyer (2003) expect that the effects provided by *ex post* flexibility in weighting performance measures may be similar to those provided by equity incentives, as the market weights the consequences of CEO actions in setting the firm's stock price. We measure the variable *EQUITY_INC* by calculating the sensitivity of the CEO's equity portfolio to price using the method described in Core and Guay (2002).

To control for potential effects of outliers, all continuous variables are winsorized at their 1st and 99th percentiles. Table 2 provides descriptive statistics of all variables for the total sample and the subsamples *FINANCIAL*, *DIVERSE*, and *NONFINANCIAL*. These statistics reveal a number of significant differences among the subsamples. The *DIVERSE* sample differs from the *FINANCIAL* sample in that it contains firm-year observations characterized by noisier accounting earnings, less intense monitoring, and larger firm size. The *NONFINANCIAL* sample differs from both the *FINANCIAL* and *DIVERSE* samples in that it contains firm-year observations characterized by noisier accounting earnings, greater unpredictability, more intense monitoring, and smaller firm size. In our empirical analysis, we take the observed differences into account whenever relevant. Table 3 presents the Pearson correlations among the independent variables, none of which cause multicollinearity concerns.

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[15] Even though the number of directorships is typically used in the literature to label a director "busy," we acknowledge that it can also be argued that the number of directorships by outsiders reflects being a "professional director" and that these outside directors are perhaps "less busy." Later, we describe the results when using an alternative measure of busyness unrelated to the number of directorships.

[16] Note that these items are the only three items that significantly load on the latent variable "*CEOPOWER*" in Ittner et al. (1997).

TABLE 2

Descriptive Statistics for the Total Sample and Three Subsamples

Variable	Total Sample (1,753 Firm-Years; 424 Firms) Mean (Std. Dev.)	*FINANCIAL* (*F*) (812 Firm-Years; 220 Firms) Mean (Std. Dev.)	*DIVERSE* (*D*) (912 Firm-Years; 248 Firms) Mean (Std. Dev.)	*NONFINANCIAL* (*NF*) (29 Firm-Years; 11 Firms) Mean (Std. Dev.)	Significant Subsample Differences[a]
NOISE	0.00	−0.11	0.08	0.60	All
	(0.98)	(0.89)	(1.04)	(0.89)	
UNPREDICTABILITY	0.11	0.11	0.11	0.17	*F* vs. *NF*; *D* vs. *NF*
	(0.05)	(0.04)	(0.05)	(0.08)	
MONIT_INTENS	0.00	0.11	−0.11	0.53	All
	(0.99)	(0.95)	(1.02)	(0.61)	
CEO_POWER	0.00	0.04	−0.03	−0.17	None
	(1.00	(1.01)	(1.00)	(0.87)	
EQUITY_INC	5.60	5.60	5.60	5.91	None
	(1.63)	(1.60)	(1.67)	(1.12)	
FIRM_SIZE	7.32	7.27	7.42	5.53	All
	(1.40)	(1.26)	(1.46)	(1.77)	

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[a] This column indicates whether the means of the subsamples are significantly different at the 10 percent level or better (two-tailed).

See Table 1 for description of subsamples.

See Appendix B for variable measurement and definitions.

TABLE 3

Pearson Correlation Coefficients between the Independent Variables
(n = 1,753)

Variable	*NOISE*	*UNPREDICTABILITY*	*MONIT_ INTENS*	*CEO_ POWER*	*EQUITY_ INC*	*FIRM_ SIZE*
NOISE	1.00					
UNPREDICTABILITY	0.34*	1.00				
MONIT_INTENS	0.11*	0.39*	1.00			
CEO_POWER	0.04	0.06*	0.04	1.00		
EQUITY_INC	0.09*	0.05*	−0.10*	0.36*	1.00	
FIRM_SIZE	−0.19*	−0.40*	−0.56*	0.12*	0.37*	1.00

* Denotes statistical significance at the 5 percent level or better (two-tailed).
See Appendix B for variable measurement and definitions.

IV. EMPIRICAL TESTS AND RESULTS

The Choice of Discretionary Bonuses

To examine the choice of discretionary bonuses and test H1 and H3a, we estimate the following equation:

$$\begin{aligned} P(DISCR\_BON_i = 1|FINANCIAL = 1) = {} & \alpha_0 + \alpha_1 NOISE_i + \alpha_2 MONIT\_INTENS_i \\ & + {}_{x3}NOISE_i \times MONIT\_INTENS_i \\ & + \alpha_4 CEO\_POWER_i + \alpha_5 FIRM\_SIZE_i + \varepsilon_i. \end{aligned} \quad (1)$$

We estimate Equation (1) using three different methods. First, we focus on a sample of firm observations and thus use a single observation per firm ("Firm Sample"). Rather than arbitrarily picking one specific observation for each firm, we use a bootstrapping procedure. Specifically, we (1) randomly select a single observation for each firm, (2) estimate the probit regression for the randomly selected sample, (3) repeat this analysis for 1,000 random samples, and (4) estimate the average coefficients and corresponding bootstrapped confidence intervals. Second, we run annual probit regressions and calculate average coefficients and the corresponding Z-statistic ("Annual Sample"). Finally, we pool all relevant observations and estimate a probit regression on a sample of firm-year observations using firm-clustered standard errors ("Pooled Sample"). Given the difficulty of interpreting interaction coefficients in nonlinear models, we report the marginal effects for all variables. In calculating the marginal effects of the interaction term (and its components), we follow a procedure based on Ai and Norton (2003). Following our hypotheses, we expect the coefficients (marginal effects) α_1 and α_3 in Equation (1) to be positive.

Table 4 presents the probit regression results regarding the choice of discretionary bonuses. For the Firm Sample, shown in column three, we find that noise in accounting earnings (*NOISE*) exhibits a positive and significant relationship with the likelihood of choosing discretionary bonuses. We further find a positive and significant marginal effect of the interaction term *NOISE* × *MONIT_INTENS*, indicating that the impact of noise on the probability of choosing discretionary bonuses becomes more positive as the monitoring intensity of the board increases. All other independent variables have no significant effect on the probability of choosing subjectivity in earnings-based contracts.

TABLE 4

Probit Estimations of the Choice of Discretionary Bonuses

Independent Variables	Predicted Sign	Firm Sample (p-value)[a]	Annual Sample (p-value)[a]	Pooled Sample (p-value)[a]
NOISE	+	0.094	0.192	0.101
		(<0.001)	(<0.001)	(0.043)
MONIT_INTENS	?	0.016	0.030	0.017
		(0.484)	(0.177)	(0.606)
NOISE × *MONIT_INTENS*	+	0.077	0.156	0.099
		(0.001)	(<0.001)	(0.002)
CEO_POWER	?	0.012	0.015	0.016
		(0.450)	(0.379)	(0.591)
FIRM_SIZE	?	−0.002	−0.019	−0.020
		(0.878)	(0.258)	(0.552)
		Industry Indicators Year Indicators	Industry Indicators	Industry Indicators Year Indicators Firm-Clustering
Pseudo R^2		5.9%	7.8%	4.2%
Sample size		196–211	152–186	812

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[a] Documented p-values are one-tailed for predictions, two-tailed otherwise.

In the Firm Sample analysis, we use a bootstrapping procedure where we (1) randomly select a single observation for each firm, (2) estimate the probit regression for the randomly selected sample, (3) repeat this analysis for 1,000 random samples, and (4) estimate the average coefficients and corresponding bootstrapped confidence intervals. All regression coefficients represent marginal effects evaluated at the mean. In the Annual Sample analysis, we run annual probit regressions and calculate average coefficients. In the Pooled Sample analysis, we pool all relevant firm-year observations. For ease of interpretation, the coefficient for *NOISE* reflects the marginal effect in the presence of intense monitoring. See Appendix B for variable measurement and definitions.

Columns four and five of Table 4 show the results for the Annual Sample and the Pooled Sample. The results are in line with those for the Firm Sample. In terms of economic significance, the marginal effects imply that, for a board with high monitoring intensity, a one standard deviation increase in *NOISE* leads to a change in the probability of using discretionary bonuses of approximately 10 percent, while moving from the lowest to the highest observed level of *NOISE* leads to a change of approximately 50 percent. Overall, our results are consistent with the expectation that the option to use discretionary bonuses becomes more likely as the accounting numbers become noisier and that this likelihood becomes higher as the monitoring intensity of the board increases. The results thus support H1 and H3a.

The Choice of Subjective Weights

To examine the choice of subjective weights and test H2 and H3b, we estimate the following equation:

$$\begin{aligned} P(SUBJ\_WEIGHTS_i = 1 | DIVERSE = 1) = \beta_0 &+ \beta_1 UNPREDICTABILITY_i \\ &+ \beta_2 MONIT\_INTENS_i + \beta_3 UNPREDICTABILITY_i \\ &\times MONIT\_INTENS_i + \beta_4 EQUITY\_INC_i \\ &+ \beta_5 CEO\_POWER_i + \beta_6 FIRM\_SIZE_i + \varepsilon_i. \qquad (2) \end{aligned}$$

Following our hypotheses, we expect the coefficients (marginal effects) β_1 and β_3 to be positive. We estimate Equation (2) using the same three methods used to estimate Equation (1) and calculate the marginal effects of the interaction term and its components based on the Ai and Norton (2003) procedure.

Table 5 reports the probit regression results. The results for the Firm Sample, shown in column three of Table 5, show that our environmental unpredictability proxy (*UNPREDICTABILITY*) is positively associated with the probability of applying subjective incentive weights. Thus, the greater the unpredictability, the more likely is the use of subjective weights, consistent with expectations. The interaction of unpredictability and monitoring intensity (*UNPREDICTABILITY* × *MONIT_INTENS*) is positive and significant, consistent with the expectation that the impact of unpredictability becomes more positive as the monitoring intensity of the board increases. Further, contrary to expectations, *EQUITY_INC* has a significant positive impact on using subjective weights, while all other variables are not significant at conventional significance levels.

The results of the Annual Sample probit regressions and Pooled Sample probit regressions are presented in columns four and five, respectively. These results are similar to the Firm Sample results. In terms of economic significance, the marginal effects imply that, for a board with high monitoring intensity, a one standard deviation increase in *UNPREDICTABILITY* leads to a change

TABLE 5

Probit Estimations of the Choice of Subjective Weights

Independent Variables	Predicted Sign	Firm Sample (p-value)[a]	Annual Sample (p-value)[a]	Pooled Sample (p-value)[a]
UNPREDICTABILITY	+	0.492	0.417	0.387
		(<0.001)	(<0.001)	(0.003)
MONIT_INTENS	?	0.009	0.013	0.022
		(0.732)	(0.589)	(0.536)
UNPREDICTABILITY × *MONIT_INTENS*	+	0.151	0.172	0.144
		(0.077)	(0.002)	(0.031)
EQUITY_INC	−	0.067	0.058	0.064
		(<0.001)	(<0.001)	(0.003)
CEO_POWER	?	−0.001	0.004	0.006
		(0.950)	(0.881)	(0.855)
FIRM_SIZE	?	0.029	−0.004	0.003
		(0.158)	(0.936)	(0.921)
		Industry Indicators Year indicators	Industry Indicators	Industry Indicators Year Indicators Firm-Clustering
Pseudo R^2		16.5%	19.0%	15.1%
Sample size		132–147 firms	109–122 firms per yr	578 firm-yrs

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[a] Documented p-values are one-tailed for predictions, two-tailed otherwise.

In the Firm Sample analysis, we use a bootstrapping procedure where we (1) randomly select a single observation for each firm, (2) estimate the probit regression for the randomly selected sample, (3) repeat this analysis for 1,000 random samples, and (4) estimate the average coefficients and corresponding bootstrapped confidence intervals. All regression coefficients represent marginal effects evaluated at the mean. In the Annual Sample analysis, we run annual probit regressions and calculate average coefficients. In the Pooled Sample analysis, we pool all relevant firm-year observations. For ease of interpretation, the coefficient for *UNPREDICTABILITY* reflects the marginal effect in the presence of intense monitoring.

See Appendix B for variable measurement and definitions.

in the probability of using subjective weights of approximately 15 percent, while moving from the lowest to the highest observed level of *UNPREDICTABILITY* leads to a change of approximately 50 percent. Overall, we find strong evidence that the use of subjective weights increases with environmental unpredictability and that this relationship increases with higher monitoring intensity of the board. The results thus support H2 and H3b.

In sum, we provide evidence consistent with the argument that discretionary bonuses are used to reduce the risk imposed on the agent. We further provide evidence consistent with the argument that, in contracts based on multiple, diverse measures, subjective weights are used to improve congruity in objectives between the principal and agent when it is difficult to establish the optimal course of action *ex ante*. As a result, subjectivity improves incentive contracting through risk reduction and congruity improvement. Finally, we show that the ability to reduce risk and improve congruity is conditional on the monitoring intensity of the board.

Additional Analysis and Robustness Checks

In examining the use of discretionary bonuses for risk-reduction purposes, we focus on a sample of observations related to the sole use of financial performance measures. As observed earlier, the theoretical argument that discretionary bonuses are used to reduce risk is obviously not restricted to this sample, but we are unable to measure noise for other performance measures. The analytical literature on the value of additional performance measures does, however, provide us with some insight into when there is more or less need to use discretionary bonuses to reduce risk. For example, Feltham and Xie (1994) show that the value of adding performance measures to an incentive contract is driven by an increase in the set of implementable actions and/or a reduction in the risk that must be imposed on the agent to induce a particular implementable action. Thus, increasing the number of performance measures is likely to have risk-reduction effects, reducing the need to use discretionary bonuses to reduce risk. This reasoning implies that, *ceteris paribus*, the addition of nonfinancial performance measures to an incentive contract based on financial measures reduces the need for and thus the likelihood of choosing discretionary bonuses.

To test this prediction, we compare the mean use of discretionary bonuses between the *FINANCIAL* and *DIVERSE* samples. Given that any observed mean difference between the samples might be driven by differences in firm characteristics between these samples, as for example shown in Table 2, we match firms from both samples based on multiple firm-level characteristics. To find pairs of observations that are similar along these multiple characteristics, we use propensity score matching (Rosenbaum and Rubin 1983). In particular, we estimate the conditional probability of using nonfinancial measures given observed firm characteristics (propensity score), subsequently match a *FINANCIAL* firm to a *DIVERSE* firm based on their propensity score, and compare their choice of discretionary bonuses.[17]

We are able to match 565 financial observations to 565 diverse observations using a maximum difference between the propensity scores of one percentage point.[18] To test whether these pairs are indeed similar along the multiple firm-level dimensions, we perform a t-test for differences in means, none of which are statistically significant at the 0.10 level. As such, the propensity score matching procedure appears to control for observed firm characteristics.

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[17] We use a probit regression to model the propensity to use nonfinancial performance measures. In addition to the variables relevant to explaining the choice of discretionary bonuses, we follow previous research to include other firm characteristics relevant to choosing nonfinancial performance measures (e.g., Bushman et al. 1996; Ittner et al. 1997). In particular, we include the variables *STRATEGY, D_CYCLE, L_CYCLE*, and *ALTMAN* (see Appendix B for variable measurement and definition).

[18] If we use a cut-off of five (ten) percentage points, we find 574 (589) pairs. The hypothesis testing results for these pairs are in line with those reported for the 565 pairs.

Results indicate that the option to use discretionary bonuses is significantly more pronounced in contracts solely based on financial measures than in contracts that also include nonfinancial measures. We observe the option to adjust in 28.32 percent of the financial observations compared to only 12.74 percent of the matched diverse observations, a statistically significant difference ($t = 6.60$; $p < 0.001$, one-tailed). These findings are consistent with the argument that the addition of nonfinancial performance measures has risk-reduction effects and thus reduces the need to use discretionary bonuses.

To provide further support for our risk-reduction argument, we examine the level of short-term incentives based on financial performance measures. If management uses discretionary bonuses to reduce risk, then the optimal level of incentives increases because the risk-incentive trade-off changes, making the provision of incentives less costly. Thus, *ceteris paribus*, the level of short-term incentives should be higher when discretionary bonuses are part of the contract versus when they are not.

To test this prediction, we use the target bonus as a percentage of salary as a measure of the level of short-term incentives. We manually gather target bonus data from the proxy statements for the *FINANCIAL* sample. This results in a usable sample of 230 target bonus observations: 151 that exclude and 79 that include the use of discretionary bonuses. To establish *ceteris paribus* conditions, we match these observations on the propensity scores that result from the estimation of Equation (1) and find 68 pairs. The results for these pairs show that the target bonus ratio equals 85.78 percent when discretion is used versus 78.59 percent when it is not. The difference is almost a month's salary and is marginally significant ($p = 0.06$, one-tailed). These results provide further support for our argument that discretionary bonuses are used to reduce risk.

To test the robustness of our main results, we perform the following tests. First, in the previous analyses, we examined the choice of different types of subjectivity within two different subsamples without controlling for potential sample selection effects. To correct for the possibility that a firm's choice of a specific type of subjectivity is also related to the firm's likelihood of choosing specific performance dimensions, we use a Heckman (1979) procedure.[19] The results of the main analysis that are presented in Tables 4 and 5 remain unchanged after controlling for sample selection in the probit model. Further, based on the Wald test, we cannot reject the null hypothesis of independence between the selection model and the probit model. Overall, these results corroborate our previous inferences.

Second, for 334 of all 912 firm-year observations in the *DIVERSE* sample, we are unable to identify whether explicit or subjective weights are being used in the contract. Thus, we also have a sample-selection issue related to the analysis of subjective weights. Similar to the previous analysis, we use a Heckman (1979) procedure to address this potential problem.[20] The results of this analysis are in line with those presented in Table 5 and are unaffected by the sample-selection correction, while the Wald test indicates that such correction is unnecessary.

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[19] More specifically, we apply partial maximum likelihood to fit a probit model with sample selection to examine both the choice of discretionary bonuses and subjective weights (Wooldridge 2002). To usefully apply the procedure, we include several factors that influence the use of nonfinancial performance measures (in addition to financial) in incentive contracts, but are not expected to influence the choice of discretionary bonuses or subjective weights. Specifically, we include *STRATEGY*, *D_CYCLE*, *L_CYCLE*, and *ALTMAN* in the selection model.

[20] As an additional determinant in the first stage, we include the likelihood that a firm is subject to the million-dollar-tax-rule of Internal Revenue Code Section 162(m). Given recent concerns about potential noncompliance (Massey et al. 2004), we expect that firms that are more likely to be subject to IRC Sec. 162(m) are less forthcoming in their disclosure. We measure the likelihood of being subject to IRC Sec. 162(m) with an indicator variable that equals 1 if lagged salary plus bonus exceeds $1 million, and 0 otherwise. The results of the probit model with sample selection indicate that smaller firms and firms likely to be subject to the million-dollar-tax-rule are more likely to remain vague in their disclosure.

Third, we test the robustness of our results to using alternative measures for noise, unpredictability, monitoring intensity, and CEO power. Our results are robust to: (1) replacing our measure of noise by the measure developed by Sloan (1993), (2) replacing our measure of environmental unpredictability by an overall measure of industry product market competition based on the three items developed by Karuna (2007), (3) using an alternative measure of busyness that is unrelated to the number of directorships to construct the measure of monitoring intensity, (4) using a measure of the emphasis on the advising role of the board as an inverse measure of board monitoring intensity, and (5) using the Entrenchment Index (E-Index) recently developed by Bebchuk et al. (2009) as an alternative measure of CEO power.[21]

Fourth, we test whether our argument that specific factors lead to a preference for a specific type of subjectivity holds. More specifically, we examine whether our results for discretionary bonuses (subjective weights) are sensitive to (1) including *UNPREDICTABILITY* and *UNPREDICTABILITY* × *MONIT_INTENS* (*NOISE* and *NOISE* × *MONIT_INTENS*) or (2) replacing *NOISE* (*UNPREDICTABILITY*) by *UNPREDICTABILITY* (*NOISE*). We find that *UNPREDICTABILITY* and *UNPREDICTABILITY* × *MONIT_INTENS* (*NOISE* and *NOISE* × *MONIT_INTENS*) have no significant effects on discretionary bonuses (subjective weights).

Finally, there is the question of whether monitoring intensity is exogenous or endogenous in Equations (1) and (2). The mere fact that monitoring intensity is a choice variable does not imply that it is endogenous in our empirical models (Chenhall and Moers 2007, 185). In our setting, potential endogeneity would need to stem from reverse causality or correlated omitted variables. Although we theoretically question the plausibility of reverse causality, we perform additional analysis, none of which hint at the existence of this problem.[22] To address the potential of correlated omitted variables problem, we add *STRATEGY*, *D_CYCLE*, *L_CYCLE*, and *ALTMAN* as main effects in Equations (1) and (2), as well as their interactions with *NOISE* and *UNPREDICTABILITY*, respectively. Our results remain consistent with all our hypotheses.

V. SUMMARY AND CONCLUSION

In CEO incentive contracts, subjectivity by the board of directors is often present in one form or another. We examine whether this practice can be explained by optimal contracting considerations. Two important considerations in incentive contracting are the risk premium paid to a risk-averse agent and the level of congruence achieved, and we argue that subjectivity can play an important role in addressing these considerations. We distinguish different types of subjectivity, link specific types to specific benefits, and thus articulate how different types of subjectivity are able to address different contracting problems related to the timing of post-contract information. In particular, we argue that the benefit of discretionary bonuses is the ability to reduce risk by subjectively adjusting for uncontrollable factors (post-decision information), with this benefit more likely to be exploited as performance measures become noisier. The benefit of subjectively weighting different performance dimensions, on the other hand, is the ability to reduce noncongruity by incorporating relevant post-contract, pre-decision information in the weighting decision, which is more likely to be exploited as the environment becomes more unpredictable.

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[21] As an alternative measure of busyness, we use the percentage of directors who are executives either at the focal firm or at other firms and use the factor score based on this item and board size to construct the alternative measure of monitoring intensity. To measure the advising role of the board, we focus on having the necessary network to fulfill this role. We create a factor score using the proportion of outside executives (Fich 2005) and the proportion of busy insiders and outsiders to construct a measure that can be interpreted as the extent to which the board emphasizes the advising role.

[22] The Spearman correlation between monitoring intensity and discretionary bonuses (subjective weights) is −0.01 with $p = 0.70$ (0.04 with $p = 0.37$). This lack of an association remains when running an OLS regression of monitoring intensity on discretionary bonuses (subjective weights), after controlling for noise, CEO power, and firm size (unpredictability, CEO power, equity incentives, and firm size) or a 2SLS regression using noise (unpredictability) as an instrument for discretionary bonuses (subjective weights).

Our results are in line with these expectations. We show that the option to use discretionary bonuses is positively related to performance measure noise and that discretionary bonuses are less pronounced in contracts for which the addition of measures already has risk-reduction effects. We further find that the use of subjective weights is positively related to environmental unpredictability. Finally, we find that the monitoring intensity of the board of directors positively affects the impact of noise and environmental unpredictability on discretionary bonuses and subjective weights, respectively.

As with any empirical study, this study has its limitations. First, even though our study distinguishes itself from previous studies by separating different types of subjectivity, this separation is only a first step. For example, we examine the choice of subjective weights on the financial versus the nonfinancial dimension. We do, however, also observe contracts with explicit weights on these two dimensions but subjective weights on the measures within a particular dimension. Not examining this type of subjectivity is unlikely to drive our results, but future research can extend our separation and examine alternative and/or more specific types of subjectivity to broaden this understanding.

Second, reliability and validity of archival-based measures remain a potential problem. Especially with respect to governance-related measures, there is a problem that the same measure is sometimes interpreted differently. We try to minimize this problem by using alternative measures of the same (or related) underlying concept. Nevertheless, we cannot rule out the possibility that measurement issues have an effect on our results, although it is unclear what that effect might be.

Finally, we examine the choice of subjectivity in CEO annual bonus contracts. We interpret annual bonuses as representing the performance assessment made by the board of directors to justify our focus on bonuses. Strictly speaking, however, optimal contracting focuses on "total compensation" and theory-consistent evidence related to bonuses does not rule out, for example, rent-extraction arguments in other compensation components.

Notwithstanding these limitations, we contribute to the literature by providing evidence that the choice of subjectivity is driven by important economic determinants. In contrast to previous studies, we show that subjectivity is indeed most important when factors such as performance measure noise and environmental unpredictability are high. As such, the evidence is in favor of boards using subjectivity in an attempt to resolve the contracting problems associated with compensation risk and goal congruence.

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APPENDIX A

Excerpts from Proxy Statements

Example of Contract Based on Financial Performance Measures without Discretionary Bonus

Topps Co Inc (proxy dated 2000/05/26)
For fiscal 2000, bonuses were intended to reward achievements by the executive officers and were contingent upon the Company's financial performance during the year. The Company's Bonus Plan for fiscal 2000 was structured to reward executive officers for increases in the Company's operating profits . . . Mr. Shorin's bonus for fiscal 2000 was determined *entirely* by reference to *uniform, pre-established earnings targets* that were developed for all senior executives *at the beginning of the fiscal year.*

Example of Contract Based on Financial Performance Measures with Discretionary Bonus

Watson Pharmaceutical (proxy dated 2001/04/12)
In addition, the Compensation Committee has decided that a formula should be used in determining the 2001 cash bonus for Dr. Chao. For 2001, Dr. Chao will be eligible to receive a cash bonus of up to $750,000, of which up to $400,000 will be determined based upon the Company satisfying certain *established earnings per share goals* for the 2001 fiscal year, and up to $350,000 will be at the *discretion* of the Compensation Committee. *Whether or not this discretionary bonus will be paid* will be determined by the Compensation Committee after the end of 2001, based on factors determined by the Compensation Committee.

Example of Contract with Explicit Weights

Alliant Energy Corp. (proxy dated 2001/05/23)
Annual bonus opportunities allow the Committee to communicate *specific goals* that are of primary importance during the *coming year* and motivate executives to achieve these goals. The Committee on an annual basis reviews and approves the programs' performance goals and the *relative weight* assigned to each goal as well as targeted and maximum award levels . . . The level of performance achieved in each category determines actual payment of bonuses, as a percentage of annual salary. *Weighting factors are applied* to the percentage achievement under each category *to determine overall performance.* If a pre-determined EPS target is not met, there is no bonus payment associated with the MICP. If the threshold performance for any other performance target is not reached, there is no bonus payment associated with that particular category.

Example of Contract with Subjective Weights

Microchip Technology Inc. (proxy dated 2000/08/18)
Incentive cash bonuses may be payable to the Company's officers, managers, and other key employees under the Company's Management Incentive Compensation Plan ("MICP"). The

Board of Directors approved the MICP for fiscal 2000 as part of the fiscal 2000 AOP at the beginning of fiscal 2000. The MICP is an aggregate bonus pool derived from a percentage of the Company's annual operating profit. This bonus pool may then be allocated among the eligible participants based upon the achievement of individual performance objectives and various subjective determinations, *with no particular weight being assigned to any one factor* ... Mr. Sanghi's aggregate MICP bonus for fiscal 2000 was determined after considering *numerous objective and subjective factors*, including industry conditions and the Company's performance, and resulted in a total MICP bonus payment for fiscal 2000 ... of approximately 79.5% of his base salary.

Example of a Change from Financial Only to Financial and Nonfinancial Performance Measures

Dominion Resources (proxy dated 2002/03/20)
Under the annual incentive program, if goals are achieved or exceeded, the executive's total cash compensation for the year is targeted to be between the median and 75th percentile of total cash compensation for similar positions at companies in our executive labor market ... Chief Executive Officer. At the beginning of 2001, we approved a consolidated earnings per share goal for Mr. Capps.

Dominion Resources (proxy dated 2003/03/21)
Chief Executive Officer. At the beginning of 2002, we approved consolidated earnings per share *and Six Sigma goals* for Mr. Capps.

Example of a Change from Subjective Weights to Explicit Weights

Action Performance Cos Inc. (proxy dated 2002/01/24)
We follow a *subjective and flexible approach rather than an objective or formula approach* to compensation. Various factors, as discussed below, receive consideration without any particular weighting or emphasis on any one factor.

Action Performance Cos Inc. (proxy dated 2003/01/29)
Our Annual Incentive Plan, as approved by shareholders in March 2002, promotes our pay-for-performance philosophy by providing for the awarding of bonuses to our executive officers based on *achieving certain pre-established performance criteria* ... Prior to the beginning of each fiscal year, or as soon as practicable thereafter, the Compensation Committee will *establish the target awards that correspond to various levels of achievement of the pre-established performance measures*. The target awards will be established as a percentage of each participant's base salary.

Example of a Change from Financial and Nonfinancial Performance Measures to Financial Only

Huffy Corp (proxy dated 2002/03/06)
Executive Officers may receive an annual bonus under the Annual Performance Incentive Plan based upon corporate and individual performance objectives established at the beginning of each year. The corporate performance measure for bonus payments in 2001 approved by the Committee and by the Board of Directors was based on return on average net assets ("RONA"), earnings per share ("EPS") and free cash flow ... with 80 percent of the bonuses based on Corporate performance and 20 percent on individual personal objectives.

Huffy Corp (proxy dated 2003/03/06)
Executive Officers may receive an annual bonus under the Annual Performance Incentive Plan based upon corporate and individual performance objectives established at the beginning of each year. The corporate performance measure for bonus payments in 2002 approved by the Committee and by the Board of Directors was based on return on average net assets ("RONA"), earnings per share ("EPS") and free cash flow ... with 80 percent of the bonuses based on Corporate performance and 20 percent on individual personal objectives (*except for Mr. Graber whose bonus is paid based solely on Corporate performance*).

APPENDIX B

Variable Measurement and Definitions

NOISE = noise in accounting numbers, measured as the time-series variability in median three-digit industry accounting returns over five years prior to the proxy data. The factor score is calculated using variability of (1) return on assets, (2) return on sales, and (3) return on equity. Noise in accounting numbers is assumed to increase with greater time-series variability in industry returns;

UNPREDICTABILITY = unpredictability of the environment the firm operates in. We regress for each firm separately the firm's monthly stock returns on the CRSP value-weighted index over a period of 12–60 months prior to the proxy data. We subsequently take the firm-specific standard deviation of the residuals to arrive at our measure of unpredictability;

MONIT_INTENS = monitoring intensity of the board, calculated as the inverse of a factor score including (1) board size, (2) the proportion of busy outside directors, and (3) the proportion of busy inside directors, higher values implying more intense monitoring;

CEO_POWER = CEO influence over the board of directors, measured as a factor score of (1) the proportion of outside directors appointed by the CEO, (2) the proportion of inside directors appointed by the CEO, and (3) CEO duality;

FIRM_SIZE = size of the firm, measured as the natural logarithm of total firm sales (millions of $);

EQUITY_INC = CEO equity incentives, measured as the sensitivity of the CEO's equity portfolio to a 1 percent change in stock price,

STRATEGY = firm's prospective strategy, measured as a factor score of (1) the ratio of research and development to sales (2) the market-to-book ratio, and (3) the ratio of employees to sales;

L_CYCLE = length of product life cycles, measured as an indicator variable that takes on the value of 1 if the firm is classified as having long-term product life cycles, and 0 otherwise;

D_CYCLE = length of product development cycles, measured as an indicator variable that takes on the value of 1 if the firm is classified as having long-term product development cycles, and 0 otherwise; and

ALTMAN = firm's degree of financial stability, calculated using Altman's (1968) financial stability model; values below 1.8 imply a high likelihood of firm bankruptcy.

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Comparing the Value Relevance, Predictive Value, and Persistence of Other Comprehensive Income and Special Items

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ABSTRACT: Gains and losses reported as other comprehensive income (OCI) and as special items (SI) are often viewed as similar in nature: transitory items with little ability to predict future cash flows and minimal implications for company value. However, current accounting standards require SI gains and losses to be recognized in net income, while OCI gains and losses are deferred until realized. This study empirically compares OCI and SI gains and losses using a model that jointly estimates value relevance, predictive value, and persistence. Results show that both SI and OCI gains and losses are value-relevant, but SI gains and losses exhibit zero persistence (i.e., are transitory), while OCI gains and losses exhibit negative persistence (i.e., partially reverse over time). Further, we find that SI gains and losses have strong predictive value for forecasting both future net income and future cash flows, while OCI gains and losses have weaker predictive value.

Keywords: *other comprehensive income; special items; financial statement presentation; value relevance; persistence; predictive value.*

Data Availability: *All data are publicly available from sources indicated in the text.*

I. INTRODUCTION

For many years, standard-setters have allowed certain gains and losses to be deferred and reported as other comprehensive income (OCI), while requiring income statement recognition of gains and losses referred to as special items (SI). The primary argument offered for deferring OCI gains and losses is that they are often related to volatile fluctuations in

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market conditions and are viewed as transitory, limiting their usefulness for predicting future cash flows and firm values (Linsmeier et al. 1997; Barker 2004; Chambers et al. 2007; Yen et al. 2007; Bamber et al. 2010). However, many types of SI gains and losses are also viewed as transitory (e.g., Elliott and Shaw 1988; Fairfield et al. 1996; Burgstahler et al. 2002), therefore making it difficult to justify the different accounting treatments for SI and OCI gains and losses.

Further differences occur in terms of presentation, as the majority of companies do not choose to report OCI gains and losses in a primary statement of financial performance (Bamber et al. 2010). During deliberations related to the joint Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB) project on Financial Statement Presentation, the Boards agreed that financial reporting would be improved by requiring companies to present a single Statement of Comprehensive Income that appends a separate section for OCI gains and losses to the traditional income statement. Yet, some FASB board members stated that they do not endorse the continued separation of OCI gains and losses (from net income) in the proposed single statement, and that the division between OCI and net income must be addressed in future standards.[1]

However, a decision to recognize OCI gains and losses as components of net income is not simple in terms of implementation, and includes questions about how much detailed information to present about OCI gains and losses, as well as where to present this information. For example, the Boards have discussed whether an OCI gain or loss (e.g., a derivative gain) should be reported as a separate line item (i.e., similar to an SI gain or loss), or integrated with the component of income to which it relates (e.g., cost of goods sold).[2] If integrated, should the line item (e.g., cost of goods sold) be presented only as a single total, or should detailed information about the various components be presented? If the latter, what details should be presented, and should they be presented on the face of the Statement of Comprehensive Income (e.g., parenthetically) or in the notes to the financial statements? The Boards have discussed making decisions about presentation issues such as these based on a "disaggregation objective"—that is, in the context of whether items exhibit differences in persistence and/or predictive value.[3]

We believe that future decision-making related to OCI and SI gains and losses can be informed by investigating whether and how OCI gains and losses differ from SI gains and losses, and how both compare to net income and cash flows. We present the results of a systematic empirical study comparing the value relevance, persistence, and predictive value of OCI and SI gains and losses.[4] Our dataset for this study consists of a panel of 236 companies that meet certain data requirements for the 1986–2005 time frame.

Our empirical analysis is based on estimating two systems of equations. The first includes equations for company stock returns, net income before special items (NI– SI), OCI, and SI. The second further partitions NI – SI into cash flows (CF) and accruals (ACC). We use the estimated coefficients from these systems to calculate dynamic responses, which are partial derivatives that represent the value relevance, persistence, and predictive value of shocks to OCI and SI.[5] We believe our results contribute both to the standard-setting process and to the academic literature.

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[1] For example, see the minutes of the June 18, 2008 FASB board meeting at: http://www.fasb.org/board_meeting_minutes/06-18-08_fsp.pdf

[2] For example, see the discussion on page 4 of Agenda Paper #2 for the September 14, 2007 Financial Statement Presentation Meeting at: http://www.fasb.org/project/09-14-07_jig_fiag.pdf

[3] For example, see the minutes of the March 21, 2007 board meeting (http://www.fasb.org/board_meeting_minutes/03-21-07_fsp.pdf) or the preliminary views discussion paper (FASB 2008a, para. S11).

[4] Similar to Lipe (1986), we use the term persistence to capture the ability of an item to predict future values of itself. We use the term predictive value to capture the ability of an item to predict future earnings or cash flows. This latter concept is sometimes referred to in the literature as the persistence of an item with respect to future earnings (e.g., Sloan 1996; Cready et al. 2010).

[5] We use the term "response" in the time-series sense, to denote the partial derivatives of current and/or future values of one variable with respect to a current unexpected change (i.e., shock) in another variable. See Boschen and Smith (1995) and Boschen et al. (2003) for other examples using this type of analysis.

We find that OCI gains and losses, SI gains and losses, NI – SI, and CF are all value-relevant. However, the value relevance of OCI gains and losses is significantly smaller than the value relevance of SI gains and losses, NI – SI, and CF. If standard-setters were to decide that all value-relevant gains and losses should be recognized as components of net income (Barth et al. 2001a; Holthausen and Watts 2001), then our results could be viewed as support for recognizing both OCI and SI gains and losses in net income. In addition, if standard-setters were to require disaggregated presentation for gains and losses with differing magnitudes of value relevance, then our results could be viewed as support for presenting disaggregated information about OCI gains and losses (i.e., separately from SI gains and losses and NI – SI).

We find that SI gains and losses exhibit zero persistence (i.e., are transitory). In contrast, we find that OCI gains and losses are not transitory, but exhibit negative persistence (i.e., partially reverse over time). Thus, we conclude that SI and OCI gains and losses are intrinsically different from each other in terms of their persistence. Furthermore, OCI and SI gains and losses are very different from NI – SI and CF, both of which are strongly positively persistent. If standard-setters were to decide that only gains and losses with positive persistence should be recognized as components of net income (Black 1993), then our results could be viewed as support for including neither OCI nor SI gains and losses in net income. In addition, if standard-setters were to decide that disaggregated data should be presented for gains and losses with substantially different levels of persistence, our results could be viewed as support for presenting disaggregated information about both OCI and SI gains and losses (i.e., separately from each other and from NI – SI).

Finally, with respect to predictive value, we find that SI gains and losses are positively and significantly associated with future NI – SI, as well as future CF, for at least five years into the future. OCI gains and losses predict future NI – SI, but only one year ahead. OCI gains and losses also predict future CF, but the responses are much smaller, and their significance varies. If standard-setters were to decide that only gains and losses with predictive value for future cash flows should be recognized as components of net income, then our results could be viewed as support for including SI gains and losses in net income, but the support for including OCI gains and losses would be more questionable. If standard-setters were to prescribe disaggregated presentation for gains and losses with different predictive values, as they propose in their recent discussion paper (FASB 2008a, 10), then our results could be viewed as support for presenting disaggregated information about OCI gains and losses (i.e., separately from SI gains and losses and NI – SI).

Overall, by integrating tests of the value relevance, persistence, and predictive value of SI and OCI gains and losses, this study extends academic research on the usefulness of disaggregating components of net income by comparing SI gains and losses to OCI gains and losses (see, e.g., Lipe 1986; Fairfield et al. 1996; Sloan 1996; Barth et al. 1999; Ohlson 1999; Barth et al. 2001b; Burgstahler et al. 2002; Dechow and Ge 2006; Cready et al. 2010).[6] Further, we extend the academic literature on the value relevance of OCI gains and losses, which has found mixed results. Specifically, we document significant value relevance for OCI gains and losses, albeit smaller in magnitude than that of SI. We also extend this literature by directly examining the persistence and predictive value of OCI gains and losses over the long run. Finally, we document an important finding that the persistence of SI and OCI gains and losses, commonly thought of as similarly transitory, are in fact different.

Section II reviews the accounting guidance for OCI and SI gains and losses, as well as the related academic literature. Section III describes our sample and data. Section IV presents our empirical analysis and related robustness testing. Section V concludes.

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[6] Note that under current Generally Accepted Accounting Principles, SI gains and losses are components of net income, while OCI gains and losses are not. However, OCI gains and losses are similar to the components of net income in that they are also a component of non-owner changes in equity.

II. BACKGROUND

Agreement has generally existed that *realized* gains and losses should be recognized in net income immediately. Developing accounting rules for *unrealized* gains and losses has proven more challenging (SEC 2008). Current accounting guidance requires that some unrealized gains and losses be treated similarly to realized gains and losses (i.e., to be recognized in net income), but allows other unrealized gains and losses to be treated differently (i.e., to be deferred as OCI).

Infrequent or unusual gains and losses that are separately reported in net income (whether realized or unrealized) are coded by Compustat as special items (SI), and include realized gains and losses from the sale of assets and investments, unrealized impairment write-offs, and realized or unrealized restructuring charges, merger costs, settlements, and other accrued items (Elliott and Hanna 1996; Kinney and Trezevant 1997; Bradshaw and Sloan 2002; Cready et al. 2010). Gains and losses that are reported as OCI include four types of gains and losses during our sample period: unrealized changes in the fair value of marketable securities classified as available-for-sale (SFAS No. 12, effective 1975; SFAS No. 115, effective 1994), foreign currency translation adjustments (SFAS No. 52, effective 1983), additional minimum pension liability adjustments (SFAS No. 87, effective 1987 with early adoption), and changes in the fair value of derivative instruments classified as cash flow hedges (SFAS No. 133, effective 2001 with early adoption) (FASB 1975, 1981, 1985, 1993, 1998).[7] These OCI gains and losses are deferred in the balance sheet account "Accumulated Other Comprehensive Income" (AOCI) until realization occurs.

Both SI and OCI gains and losses are viewed by many as transitory (i.e., exhibiting zero persistence), and thus not useful for predicting future cash flows (i.e., exhibiting minimal predictive value) and company value (i.e., exhibiting minimal value relevance). If these views are valid, then our current guidance results in different accounting treatments for similar items. The deferral of gains and losses as OCI has expanded over time due to increased interest in remeasuring certain balance sheet items subsequent to the initial recognition date, specifically those items that standard-setters viewed as being sufficiently important and having sufficiently reliable measurements. The most hotly debated aspect of this guidance has been where to reflect *changes* in the remeasured balance sheet accounts. OCI treatment was developed because these changes were argued to be too volatile to be a useful component of net income. However, significant concerns have also been raised about the use of OCI to manage earnings.[8]

As noted earlier, the FASB and IASB have been working to improve financial statement presentation, and the FASB has discussed basing their decisions about financial presentation on a "disaggregation objective"—that is, disaggregating items that exhibit differences in persistence or predictive value. This is consistent with the ideas of Ohlson (1999) that value relevance, persistence (ability to predict future values of itself), and predictive value (forecasting relevance) are important in evaluating earnings components. Below we review the literature on the value relevance, persistence, and predictive value of OCI and SI.

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[7] Current international accounting standards allow additional items to receive similar treatment, such as revaluations of certain fixed assets. In addition, subsequent to our sample period, the computation of OCI related to pensions changed dramatically, as did the accounting for changes in the fair value of debt securities that are other than temporarily impaired.

[8] For example, in SFAS No. 115, two dissenting members of the Board raised concerns about the use of OCI to manage earnings, and stated that this accounting would "provide the opportunity for the managers of an enterprise to manage its earnings by selectively selling securities and thereby selectively including realized gains in earnings and selectively excluding unrealized losses from earnings" (FASB 1993). More recently Graham et al. (2005) presents a survey of CFOs, 78 percent of whom admit to sacrificing long-term value to smooth earnings, and 20 percent of whom agree or strongly agree that they would sell investments to recognize gains this quarter.

Value Relevance

Prior research has documented that SI gains and losses are value-relevant (i.e., associated with stock returns), although the magnitude of the stock market response is found to be smaller than that for earnings before special items (Elliott and Shaw 1988; Elliott and Hanna 1996; Cready et al. 2010). Studies examining the value relevance of OCI gains and losses, as well as the individual components of OCI, have found mixed results (Barth 1994; Soo and Soo 1994; Ahmed and Takeda 1995; Bartov 1997; Dhaliwal et al. 1999; O'Hanlon and Pope 1999; Seow and Tam 2002; Louis 2003; Ahmed et al. 2006; Chambers et al. 2007; Kanagaretnam et al. 2009). Dhaliwal et al. (1999) construct *as if* OCI using Compustat data over the 1994 to 1995 time period, and find no clear evidence that comprehensive income (defined as NI + OCI) is more strongly associated with stock returns than is net income. In contrast, using hand-collected *as reported* OCI data in the post-SFAS No. 130 (FASB 1997) time period (1998 to 2003), Kanagaretnam et al. (2009) find that comprehensive income is *more* strongly associated with stock returns than is net income, and Chambers et al. (2007) find a dollar-for-dollar association between OCI and stock returns that is consistent with Ohlson's (1999) expectations for transitory items.

Persistence

Lipe (1986) finds that different components of earnings have different persistence, and that the magnitude of the market reaction to the individual components of earnings is related to the specific persistence of each component. Researchers have generally assumed SI gains and losses to be transitory, that is, to have zero persistence (Fairfield et al. 1996; Bradshaw and Sloan 2002; Burgstahler et al. 2002). For example, Bradshaw and Sloan (2002) find that SI gains and losses are highly correlated with nonrecurring charges excluded from GAAP earnings by analysts.

Researchers have also generally assumed OCI gains and losses to be transitory (Linsmeier et al. 1997; Barker 2004; Chambers et al. 2007; Yen et al. 2007; Bamber et al. 2010), but for different reasons. Although special items are related to changes in economic conditions, a given item (e.g., a specific machine) does not typically produce an SI gain or loss every period. In contrast, assets and liabilities yielding OCI gains and losses are revalued each period, so OCI gains and losses *will* recur over time for the same asset or liability. As an example, available-for-sale securities are marked to market at the end of each period as securities prices change. However, if capital markets are efficient, then current available-for-sale gains and losses should not predict future available-for-sale gains and losses.

Nevertheless, there is evidence that SI and OCI gains and losses may not necessarily be transitory. Specifically, Elliott and Hanna (1996), Francis et al. (1996), and Cready et al. (2010) find that certain special items recur over time. Cready et al. (2010, 1579) find evidence "consistent with the idea that managers find it attractive to classify ordinary recurring operating expenses as 'special items.'"[9] OCI gains and losses may also not be transitory. Management makes choices related to the selection of investments and the timing of asset sales/repatriations, as well as the funding of pension plans and the duration of derivatives contracts (e.g., Lee et al. 2006). As a result, OCI gains and losses may reflect more than just unpredictable changes in market conditions.

Adding to the complexity, cumulative OCI gains or losses will "recycle" when the asset is sold or the liability settled. For example, if an available-for-sale security is sold for a (cumulative) gain, then this gain will be removed from AOCI on the balance sheet and be reported as a negative component of OCI, while also being recognized as a positive component of net income, and as a cash inflow.[10] This artifact of the current accounting treatment for OCI gains and losses could lead to negative persistence if recycling occurs regularly.[11]

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[9] Note that Cready et al. (2010) do not empirically estimate our measure of persistence (i.e., the relation between current and future values of SI). Rather, they use SI frequencies as interaction terms in a regression of future net income on contemporaneous SI and NI − SI. Thus, the recurring SI gains and losses reported by Cready et al. (2010) may or may not exhibit persistence as we define it.

On the other hand, OCI gains and losses may remain on the balance sheet for years before the underlying asset is sold or the liability settled. For example, Moody's considers the foreign currency translation adjustment to be a permanent component of stockholder equity on the balance sheet (i.e., AOCI); these items are not expected to be realized and thus their gains and losses are not expected to be recycled and recognized as income (Emrick 2006). Thus, a gain in the current period could be associated with a loss in a future period (i.e., negative persistence), another gain in the future (i.e., positive persistence), or neither. We conclude that it is unclear *ex ante* what the persistence of SI and OCI gains and losses will be.

Predictive Value

Studies have shown that different components of earnings have different predictive value (Finger 1994; Sloan 1996; Fairfield et al. 1996; Dechow and Ge 2006), and that disaggregating earnings into components enhances the prediction of future performance (Fairfield et al. 1996; Barth et al. 2001b). Studies document a positive relation between special items and future net income, although the coefficient on SI gains and losses is smaller than the coefficients on net income, operating income, and total accruals excluding special items (e.g., Fairfield et al. 1996; Burgstahler et al. 2002; Dechow and Ge 2006; Fairfield et al. 2009). In addition, Cready et al. (2010) find that the ability of negative special items to predict future earnings is higher when the company has reported negative special items in prior quarters.

In contrast, there is no direct evidence about the predictive value of OCI.[12] Skinner (1999) argues that OCI gains or losses should not have implications for future operating performance or future cash flows, because past changes in the value of OCI gains and losses have no implications for future changes, and so are unlikely to be related to future cash flows. Alternatively, Ohlson (1999, 154) demonstrates analytically how current gains from a forward contract (or other gain or loss) may not predict future gains from the forward contract (i.e., exhibit zero persistence), but may still predict future earnings (see also FASB 2008b, ¶QC4). If an OCI gain or loss substantially reverses before it is realized, it seems reasonable to expect no future cash flow consequences. However, if OCI gains and losses accumulate on the balance sheet for several years and then an asset is sold, a liability is settled, or a pension plan is funded, there could be an association with future cash flows.

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[10] Although companies are expected to report ongoing unrealized gains and losses separately from the recycled gains and losses (i.e., the reclassifications), in practice very few companies provide adequate detail to allow the successful partition of unrealized gains and losses versus reclassifications. Therefore, most OCI data available to financial statement users are the net of these two items, and thus it is important to consider the *net* OCI (i.e., unrealized gains and losses net of reclassifications).

[11] Consider a simple scenario where an available-for-sale security is purchased for $100, increases in value by $25 during the first year, holds that value for two more years, and then is sold for $125. In the first year, the $25 gain would be recorded as an OCI gain. However, OCI for years two and three would be zero, and so the $25 gain could be viewed as transitory. But, since the $25 is recycled out of AOCI upon sale, and recognized as a gain in net income, the OCI amount for year three is <$25>. Thus, in this scenario, OCI would have zero persistence in the short run, but 100 percent negative persistence in the long run, i.e., the $25 gain in year one would *reverse* in year three.

[12] There is some limited evidence about the predictive value of net income versus comprehensive income. Dhaliwal et al. (1999) find that net income is more strongly associated with one-year-ahead cash flows than is comprehensive income. In contrast, Kanagaretnam et al. (2009) find that comprehensive income is more strongly associated with one-year-ahead cash flows than is net income. In addition, O'Hanlon and Pope (1999) make the point that due to timing differences in the recognition of events by the stock market and their recognition by the accounting system, tests based on annual data have very low power. It could be the case that a relation between OCI and future cash flows takes more than one year to develop.

In summary, OCI and SI gains and losses are similar, in that they both result from management choices about the selection of assets and liabilities, as well as choices about the timing of subsequent sales, settlements, and write-downs. However, we believe that the empirical evidence to date does not unequivocally support the contention that OCI and SI are transitory. Further, although research has shown that SI gains and losses predict future net income, the question of OCI's predictive value remains open. Finally, while the value relevance of SI has been consistently documented, prior research on the value relevance of OCI has found mixed results. In the following section, we describe our approach to testing the persistence, predictive value, and value relevance of OCI and SI using a common sample and an integrated model.

III. SAMPLE AND DATA

Sample Selection

If detailed data about company assets and liabilities were consistently available, then we could select a sample of companies with assets and liabilities that exhibit the potential to yield SI and OCI gains and losses. Because OCI gains and losses result from recurring remeasurements of underlying assets and liabilities, we assume that companies with regular OCI gains and losses will have the requisite assets. However, we cannot assume the same for SI gains and losses, as they are often the result of nonrecurring valuation adjustments. As a result, we focus our sample selection on companies with OCI gains and losses. Further, although we recognize that it is important to understand the behavior and impact of OCI in a wide cross-section (see Dhaliwal et al. 1999; Biddle and Choi 2006), it is also important to understand these issues in companies where OCI is regularly reported and material in amount, as this latter group is particularly affected by changes in the accounting for OCI.[13]

We begin our sample selection by identifying all company-years in the Compustat database for the period 1976–2005 (i.e., beginning with the effective date of SFAS No. 12), eliminating company-years without corresponding CRSP data, companies with fiscal year-end changes, foreign filers, and flow-through entities. This process yields a possible sample of 14,435 companies. However, approximately 54 percent of these companies (n = 7,748) report no OCI gains or losses during the entire 1976–2005 time frame. Further, although the remaining 6,637 companies have some evidence of OCI gains or losses, many of these companies report OCI gains or losses only occasionally.[14] Because we are testing dynamic relations in the data, it is important to have a complete time-series to give the empirical model its best chance to capture these relations. Alternatively stated, it is critical to minimize the likelihood that any *lack of* value relevance, predictive value, and/or persistence results from selecting companies with only intermittent occurrences of OCI gains or losses, or with unusually low occurrences of special items.

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[13] For example, Dhaliwal et al. (1999) analyze all 1994–1995 firm-years with the necessary Compustat and CRSP data (n = 11,425 firm-years) and report that only 22.7 percent of the firm-years reflect gains and losses on available-for-sale securities, 26.4 percent reflect foreign currency adjustments, and 8.2 percent reflect pension gains and losses.

[14] There is a very high correlation between the occurrence of the OCI gains and losses and the reporting of accumulated other comprehensive income (AOCI) on the balance sheet. More specifically, for the 6,637 companies with some evidence of OCI gains or losses, 95 percent of the observations have: (1) both AOCI and OCI or (2) neither AOCI nor OCI. In addition, very few companies (less than 0.5 percent of the 6,637 companies) have AOCI in every year and report an OCI flow in less than 50 percent of those years.

Another issue that affects our sample selection process is whether to use proxies for the OCI components based on Compustat data (referred to in the literature as *as if* data). Dhaliwal et al. (1999, footnote 9) note a high correlation between these Compustat proxies and hand-collected data from annual reports for the gains and losses related to available-for-sale securities (99 percent) and foreign currency translations (97 percent). However, they note a lower correlation for the pension component of OCI (40 percent). Further, Chambers et al. (2007) cite their use of hand-collected annual report data (*as reported* data) versus *as if* data as an important factor in their results. We made the decision to hand-collect certain OCI data based on these studies, and also to allow us to obtain direct measures of the OCI gains and losses related to derivatives. This decision is discussed further in the next section.

We obtain a final sample of 236 companies, which is the complete set of companies that report nonzero OCI gains or losses in each year for the 1986–2005 time frame. We settled on 1986 as our starting year because three of the four OCI components were in place as of that year. This sample balances the cost of hand-collecting data with the need for a relatively long time-series for each company. This approach makes our results less generalizable to companies with only infrequent occurrences of OCI. However, we believe that our sample fairly represents an important group of companies that are likely to be most affected by changes in the financial reporting of OCI gains and losses.

Because we are comparing OCI to SI, we are also concerned that our sample companies report special items. Due to the nature of special items, it would be unusual to find companies that report SI gains and losses every year. We find that 42 percent of our company-year observations include nonzero special items, which is in the range of the incidence of special items reported by other studies. Dechow and Schrand (2004) find that 25 percent of all Compustat companies report large special items (greater than 1 percent of total assets) in 2001, and Donelson et al. (2011) find that 50 percent of the 1,000 largest companies report large special items in 2001. Below we discuss our variable measurement, as well as our benchmarking of this sample to those of other studies.

Variable Measurement

Our primary data include company stock returns (R), net income (NI), cash flows (CF), accruals (ACC), SI gains and losses (SI), and OCI gains and losses (OCI). We define company stock returns as the buy-and-hold stock return reported by CRSP and cumulated over the 12-month period ending three months after the company's fiscal year-end. We select this period to ensure that information on OCI reported in the company's annual report is available to the market. We define net income as Compustat item #172 (net income after extraordinary items and discontinued operations), cash flows as Compustat item #308 (operating cash flows),[15] accruals as net income less special items less cash flows, and special items as Compustat item #17. Following the predictive value literature, all variables except for stock returns are deflated by average total assets (Sloan 1996; Barth et al. 2001b; Dechow and Dichev 2002; Francis and Smith 2005; Kim and Kross 2005; Richardson et al. 2005; Dechow and Ge 2006). This choice of deflator is addressed later in the "Robustness Testing" section.

For the years 1998–2005, we hand-collected the individual components of OCI and total comprehensive income from 10-K filings; for the years 1986–1997, we use the *as if* data derived from Compustat. We made this decision based on an analysis of a pilot sample consisting of the 100 largest U.S. companies in terms of market capitalization as of December 31, 2003 (35 percent of which remain in our current sample). In the analysis of this pilot sample, we compared hand-collected OCI data for the 1996–2003 time period with *as if* data derived from Compustat. We found that the *as if* data cannot be used to reliably measure the pension component of OCI beginning in 1998.[16] In contrast, the correlations in our sample between our hand-collected data and the *as if* data for the pension component in 1996 and 1997 are 97 percent and 99 percent, respectively. Further, similar correlations for available-for-sale securities and foreign currency translation adjustments exceed 90 percent in almost all years.

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[15] For years subsequent to 1988, the year that SFAS No. 95 became effective, we define CF as Compustat data item #308. For years prior to 1988, following Francis et al. (2004), we define CF as net income before extraordinary items (data item #18) less total accruals, where total accruals are defined as the change in current assets (data item #4) less the change in current liabilities (data item #5) less the change in cash (data item #1) plus the change in short-term debt (data item #34) less depreciation and amortization expense (data item #14). These two CF measures are very highly correlated, with a correlation coefficient of 0.98 ($p < 0.001$).

Our OCI gains and losses are defined as follows (note that gains are defined to be positive and losses are defined to be negative):

AFS = change in the balance of unrealized gains and losses on marketable securities categorized as available-for-sale securities (hand-collected for 1998–2005; defined as the change in the Compustat variable "marketable securities adjustment" [item #238] for 1986–1997);

FC = change in foreign currency translation adjustment (hand-collected for 1998–2005; defined as the change in the Compustat variable "retained earnings-cumulative translation adjustment" [item #230] for 1986–1997);

PEN = change in the additional minimum pension liability in excess of unrecognized prior service cost, where increases are negative (hand-collected for 1998–2005; for 1986–1998 if the additional minimum pension liability exceeds the prior service cost, *PEN* is defined as $-0.65 \times$ (Compustat variable "pension-additional minimum liability" [item #298] less Compustat variable "pension-unrecognized prior service cost" [item #297], and 0 otherwise);

DER = change in the balance of unrealized gains and losses on derivatives classified as cash flow hedges (hand-collected for 2000–2005); and

OCI = other comprehensive income ($AFS + FC + PEN + DER$).

Benchmarking and Descriptive Statistics

We benchmark and describe our sample in three ways. First, Table 1 compares our sample to different groups of companies not selected. Second, Tables 2 and 3 present descriptive statistics. Finally, since our sample selection differs from other studies in regard to the incidence of OCI data, we discuss (untabulated) results obtained from using our dataset to estimate selected regressions from prior studies of OCI value relevance.

Table 1 compares certain financial data and industry membership data for the 7,798 companies with no evidence of OCI, the 6,637 companies with some evidence of OCI, and our final sample. Panel A compares these groups in terms of size (i.e., market value of equity), profitability (i.e., return on assets and annual stock returns), and the extent to which OCI and SI are material to the company.[17]

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[16] Compustat reports data on the minimum pension liability for almost none of our pilot sample companies after 1998 due to a change in the disclosure requirements for pension plans, leading to an average correlation between our hand-collected *PEN* data and the Compustat-derived data of *negative* 93 percent in 1998 and less than 1 percent in each of the years 1999–2003. The correlations for 1996 and 1997 were 99 percent and 98 percent, respectively. This may partially explain the Chambers et al. (2007) failure to find value relevance when using *as if* data for the post-SFAS 130 time period.

[17] We calculate OCI materiality using the data that is available in Compustat and following the definitions used by Dhaliwal et al. (1999). OCI materiality is defined as the absolute value of total OCI divided by the absolute value of net income each year. We calculate SI materiality in the same way, also based on Compustat data as described in the variable measurement section.

TABLE 1

Sample to Non-Sample Benchmarking

Panel A: Descriptive Statistics for Companies With and Without Any Evidence of OCI

	Companies with No Evidence of OCI (n = 7,798)			Companies with Evidence of OCI (n = 6,637)			Final Sample (n = 236)		
	Mean	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**
Market Value of Equity	$217	$29	$1,194	$1,915	$168	$10,841	$6,594	$883	$24,394
Return on Assets	−7.27%	2.31%	66.05%	−1.03%	3.27%	34.52%	5.61%	5.80%	12.02%
Annual Stock Return	15.65%	3.82%	84.26%	22.10%	9.98%	82.47%	18.55%	12.91%	40.50%
OCI Materiality	NA	NA	NA	0.24	0.001	3.70	0.33	0.06	2.61
SI Materiality	0.34	0	7.59	0.55	0	14.31	0.58	0	17.41

Panel B: Industry Composition for Companies With and Without Evidence of OCI

	Companies with No Evidence of OCI (n = 7,798)		Companies with Evidence of OCI (n = 6,637)		Final Sample (n = 236)	
	# Companies	**%**	**# Companies**	**%**	**# Companies**	**%**
Manufacturing	3,525	45%	3,146	47%	181	77%
Financial Institutions	992	13%	1,379	21%	26	11%
Service	3,281	42%	2,112	32%	29	12%

This table reports descriptive statistics for three comparison groups: companies with no evidence of OCI, companies with evidence of OCI, and companies in the final sample of firms evaluated in this paper. Companies with evidence of OCI are companies for which Compustat reports data on available-for-sale securities, foreign currency translation, or a minimum pension liability in any year.

OCI materiality is defined as the absolute value of total OCI divided by the absolute value of net income each year, where OCI is calculated using the data that are available in Compustat, and following the definitions used by Dhaliwal et al. (1999).

SI materiality is defined as the absolute value of special items divided by the absolute value of net income each year.

The average company in our final sample is larger than the other subsets, and has a higher mean and median ROA. However, the average annual stock return of our sample is within the range of the average returns for the other subsets. In addition, as intended, OCI is more material to the mean and median company in our sample than to other subsets of companies (i.e., mean OCI materiality of 0.33 versus 0.24; median OCI materiality of 0.06 versus 0.001). Finally, the mean SI materiality for our sample firms is similar to other subsets of companies with evidence of OCI (0.55 versus 0.58).

Table 1, Panel B reports the industry composition for the same groups. Manufacturing companies comprise 77 percent of our sample. This is higher than the overall Compustat population, which is not surprising because manufacturing companies commonly have OCI-related activities, such as pension plans and multinational operations. A benefit of our final sample is that it extends the literature beyond the financial companies so often examined because of the availability of detailed OCI data for those companies.

Table 2, Panel A presents descriptive statistics for our final sample of 236 companies. Both the mean and median companies in the sample are profitable, yielding an annual stock return of 16.15 percent and 11.93 percent, respectively. On average, both *SI* and *OCI* are negative, as are *PEN* and *DER*. Both *AFS* and *FC* are positive, on average.

TABLE 2
Descriptive Statistics for Sample Data

Panel A: Descriptive Statistics

	Mean	Median	Standard Deviation
R	16.15%	11.93%	38.67%
NI	431.36	65.86	1,590
CF	869.22	134.76	3,024
ACC	−412.44	−41.40	2,004
SI	−34.91	0.00	427
OCI	−2.20	−0.08	544
AFS	6.78	0.00	212
FC	1.27	0.00	231
PEN	−9.87	0.00	421
DER	−1.52	0.00	106

Panel B: Frequency of OCI Data by Component

	Percentage Nonzero Observations			
	1986–2005	1994–2005	1998–2005	2001–2005
AFS	30.9%	40.9%	46.5%	49.4%
FC	91.9%	92.3%	94.1%	94.5%
PEN	33.8%	46.1%	56.1%	70.1%
DER	NA	NA	NA	56.0%

Panel A reports descriptive statistics.

Panel B reports the percentage of sample observations where each component of *OCI* is nonzero for four different time frames, 1986–2005, 1994–2005, 1998–2005, and 2001–2005.

Except for stock returns, all numbers reported are in millions. Statistics are calculated over the 1986–2005 time frame, except for *DER*, which is calculated over the 2001–2005 time frame.

Variable Definitions

R = buy and hold stock returns cumulated over the period ending three months after the company's fiscal year-end;
NI = annual net income after extraordinary items and discontinued operations;
CF = operating cash flows;
ACC = total accruals;
SI = special items; and
OCI = other comprehensive income, and is measured as the sum of the gains and losses related to the following four items: available-for-sale securities (*AFS*), foreign currency translations (*FC*), defined benefit retirement plans (*PEN*), and derivatives accounted for as cash flow hedges (*DER*).

Table 2, Panel B presents the percentage of nonzero observations for each component of OCI over four different time periods. The percentage of nonzero observations for each component has been relatively stable over time, particularly for *FC*. An exception is *PEN*, which increased to 70.1 percent of the observations for the 2001–2005 time frame. This increase is not unexpected, as the decline in the stock market caused many companies to record additional minimum pension liabilities during this time period. *DER* was not a component of OCI until after 2000, when SFAS No. 133 became effective. For the period 2001 to 2005, 56 percent of the observations included *DER*, confirming the importance of hand-collecting this item.

Table 3 reports the autocorrelations for each of the variables through lag 6. Net income exhibits the most persistent autocorrelation structure. The autocorrelation of net income at lag 1 of 0.728 is consistent with the autocorrelation of 0.71 reported by Dechow and Schrand (2004, 13) for a

TABLE 3

Autocorrelations for Sample Data

Autocorrelation of Lag	*NI*	*CF*	*ACC*	*SI*	*OCI*	*AFS*	*FC*	*PEN*	*DER*
1	0.728**	0.804**	0.724**	0.005	−0.068**	0.059**	0.215**	−0.225**	0.004
2	0.571**	0.687**	0.589**	−0.128**	−0.308**	0.012**	−0.305**	−0.299**	−0.212**
3	0.433**	0.602**	0.516**	0.083**	−0.085**	−0.065**	−0.237**	−0.042**	−0.273**
4	0.415**	0.564**	0.518**	0.016**	0.077**	−0.132**	0.012**	0.144**	0.093
5	0.355**	0.486**	0.419**	0.012**	0.023**	0.091**	0.007**	−0.019**	NA

*, ** Indicates a probability of less than 10 percent and 5 percent, respectively, that the coefficient is equal to zero.
Statistics are calculated over the 1986–2005 time frame, except for *DER*, which is calculated over the 2001–2005 time frame.

Variable Definitions

NI = annual net income after extraordinary items and discontinued operations;

CF = operating cash flows;

ACC = total accruals;

SI = special items; and

OCI = other comprehensive income, and is measured as the sum of the gains and losses related to the following four items: available-for-sale securities (*AFS*), foreign currency translations (*FC*), defined benefit retirement plans (*PEN*), and derivatives accounted for as cash flow hedges (*DER*).

sample of 56,940 company years over the period 1987 to 2002. As is expected, the autocorrelations of both *SI* and *OCI* are much smaller than those of *NI*. The *OCI* autocorrelations are mainly negative, consistent with Chambers et al. (2007) and Bamber et al. (2010).

As discussed below, a substantial portion of our empirical model is formulated in terms of levels. We check for nonstationarity by testing the null hypothesis of a panel unit root using the approach suggested by Maddala and Wu (1999) to combine the p-values from individual augmented Dickey and Fuller (1979) unit root tests. We reject the null for all variables, based on a critical value of 0.05.

Finally, we benchmark our sample to those of previous studies by estimating regression equations commonly used to test for value relevance of OCI. Our sample produces similar coefficients to those obtained by Dhaliwal et al. (1999), who compare regressions of returns on net income with regressions of returns on comprehensive income using a much larger cross-section of companies for the 1994–1995 time frame (n = 11,425 firm-years). More specifically, the coefficient from our regression of returns on comprehensive income for the 1994–2005 time frame is 0.643, which is similar to the Dhaliwal et al. (1999, Table 2, Panel B) coefficient of 0.680. Our sample also produces generally similar results to those of Chambers et al. (2007), who estimate regressions of returns on net income and OCI for the S&P 500 over the 1994–2003 time frame. More specifically, using our data for the 1994–2005 time frame, we estimate a coefficient on *OCI* of 1.332, which is similar to Chambers et al.'s (2007, Table 2, Panel A) coefficient of 1.29 (the sum of 0.44 and 0.85).

In summary, we believe that focusing our sample selection on companies with a complete time-series of OCI gains and losses over a 20-year period does not have any obvious negative consequences. Strictly speaking, our results can only be generalized to large, mature publicly traded companies that have a long history of OCI-related assets and liabilities, and thus OCI gains and losses. However, to the extent that we are documenting characteristics of specific components of OCI, our results should hold regardless of whether the OCI gains and losses are reported every year.

IV. ANALYSIS AND RESULTS

Our empirical model is designed to jointly test value relevance, persistence, and predictive value. Accomplishing this goal requires a model in which we can consider a change in (or shock to) one variable (e.g., *OCI* or *SI*), and determine its association with company stock returns (to measure its value relevance), with future values of net income and/or cash flows (to measure its predictive value), and with future values of itself (to measure its persistence).

Our resulting empirical model can be described as consisting of a stock returns equation and forecasting equations for certain components of non-owner changes in equity (e.g., *OCI*, *SI*, and *NI* – *SI*). Similar to Kormendi and Lipe (1987), our stock returns equation is formulated such that company stock returns are a function of the contemporaneous innovations in (or shocks to) the other variables. Following other studies investigating persistence or predictive value (e.g., Fairfield et al. 1996; Sloan 1996), the forecasting equations are constructed in levels and include only past values as independent variables.

We estimate two variations of the model. In the first, we partition non-owner changes in equity into *NI* – *SI*, *SI*, and *OCI*, which is effective in linking our findings to prior research. We refer to this as the net income model. Because standard-setters and financial statement users are interested in predicting future cash flows, we examine a second model that further partitions *NI* – *SI* into *CF* and *ACC*. We refer to this second model as the cash flow model.

In order to capture the phenomena of persistence and predictive value, we include three lags of each dependent variable as independent variables in each forecasting equation. Allowing a richer representation of the long run is especially important for OCI gains and losses, which may be adjusted and/or realized over multiple years (O'Hanlon and Pope 1999). This formulation also allows for higher-order time-series processes than a random walk (Lipe and Kormendi 1994; Baginski et al. 1999). In order to capture the interrelations among the components of non-owner changes in equity, we also include three lags of all other components in each forecasting equation. Allowing for these cross-relations is important in situations where, for example, an OCI gain or loss in the current year is recognized as a special item or other net income item in a subsequent year.

Our net income model is presented in (1) below:

$$\begin{bmatrix} R_{it} \\ NI_{it} - SI_{it} \\ SI_{it} \\ OCI_{it} \end{bmatrix} = \sum_{\ell=1}^{3} \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & \beta_N^\ell & \beta_S^\ell & \beta_O^\ell \\ 0 & \theta_N^\ell & \theta_S^\ell & \theta_O^\ell \\ 0 & \gamma_N^\ell & \gamma_S^\ell & \gamma_O^\ell \end{bmatrix} \begin{bmatrix} R_{it-\ell} \\ NI_{it-\ell} - SI_{it-\ell} \\ SI_{it-\ell} \\ OCI_{it-\ell} \end{bmatrix} + \begin{bmatrix} 1 & \alpha_N^0 & \alpha_S^0 & \alpha_O^0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} z_{it}^{R} \\ z_{it}^{NI-SI} \\ z_{it}^{SI} \\ z_{it}^{OCI} \end{bmatrix}, \tag{1}$$

and our cash flow model is presented in (2) below:

$$\begin{bmatrix} R_{it} \\ CF_{it} \\ ACC_{it} \\ SI_{it} \\ OCI_{it} \end{bmatrix} = \sum_{\ell=1}^{3} \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & \psi_C^\ell & \psi_A^\ell & \psi_S^\ell & \psi_O^\ell \\ 0 & \eta_C^\ell & \eta_A^\ell & \eta_S^\ell & \eta_O^\ell \\ 0 & \theta_C^\ell & \theta_A^\ell & \theta_S^\ell & \theta_O^\ell \\ 0 & \gamma_C^\ell & \gamma_A^\ell & \gamma_S^\ell & \gamma_O^\ell \end{bmatrix} \begin{bmatrix} R_{it-\ell} \\ CF_{it-\ell} \\ ACC_{it-\ell} \\ SI_{it-\ell} \\ OCi_{it-\ell} \end{bmatrix} + \begin{bmatrix} 1 & \alpha_C^0 & \alpha_A^0 & \alpha_S^0 & \alpha_O^0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} z_{it}^{R} \\ z_{it}^{CF} \\ z_{it}^{ACC} \\ z_{it}^{SI} \\ z_{it}^{OCI} \end{bmatrix}, \tag{2}$$

where the variables are as defined in the variable measurement section for company *i* in period *t*.[18]

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[18] The current aggregate market return is included in the equation for company stock returns as an exogenous variable to control for changes in market conditions, which are likely to be correlated with SI and OCI gains and losses (see Bloomfield et al. 2006). For parsimony, this variable does not appear in the matrix representations (1) and (2). Constant terms for each regression are estimated but are also subsumed in the matrix representations.

The α^ℓ, β^ℓ, ψ_I^ℓ, η^ℓ, θ^ℓ, and γ^ℓ terms are the coefficients at lag ℓ. The subscript on each coefficient indicates the associated variable, where N, C, A, S, and O denote $NI - SI$, CF, ACC, SI, and OCI, respectively. The z_{it}^R, z_{it}^{NI-SI}, z_{it}^{CF}, z_{it}^{ACC}, z_{it}^{SI}, and z_{it}^{OCI} terms are shocks to stock returns, $NI - SI$, CF, ACC, SI, and OCI, respectively.

Each of these shocks can be traced through the system to determine its effect on each variable, contemporaneously as well as over the long run. However, due to the extensive lag structure in the model, the response of one variable to a shock in another variable may be a complex combination of the regression coefficients from the models in (1) or (2). Thus, we cannot investigate persistence and predictive value only by examining the regression coefficients. Rather, we estimate dynamic responses that capture the marginal effects of shocks to OCI and SI, allowing us to compare persistence and predictive value over both the short run and long run (see discussion of vector auto-regressions and impulse responses in Hamilton [1994]). Below we discuss the estimation of the models in (1) and (2) and the calculation of the dynamic responses.

We estimate the set of equations in each model jointly in order to increase efficiency by estimating the parameters using the information in the stock returns variable as well as the components of non-owner changes in equity (Kormendi and Lipe 1987).[19] The set of equations for each model is estimated as a system of seemingly unrelated regressions (SURs) to account for heteroscedasticity and contemporaneous correlation in the errors across equations. The regression results from the estimation of the net income model in (1) and the cash flow model in (2) are presented in Appendices A and B for reference.

We then use the regression coefficients to calculate the dynamic responses. Specifically, we invert the estimated systems in (1) and (2) to obtain their moving average forms, and then write expressions for each equation for periods t, $t+1$, $t+2$, through period $t+5$. Finally, we calculate the sequences of derivatives (i.e., the dynamic responses) that correspond to value relevance, persistence, and predictive value, as discussed below. The complete list of derivatives that we calculate for the net income model is summarized in Appendix C. We also examine long-run cumulative responses, which are the sums of the responses for periods t through $t+5$.

We test value relevance by examining the responses of company stock returns to shocks in $NI - SI$, CF, ACC, SI, and OCI. The derivatives measuring value relevance are straightforward because we model returns as a direct function of the shocks, with no feedback of returns to other variables. Specifically, the contemporaneous responses of stock returns are: $\partial R_t/\partial z_t^{NI-SI} = \alpha_N^0$, $\partial R_t/\partial z_t^{CF} = \alpha_C^0$, $\partial R_t/\partial z_t^{ACC} = \alpha_A^0$, $\partial R_t/\partial z_t^{SI} = \alpha_S^0$, and $\partial R_t/\partial z_t^{OCI} = \alpha_O^0$. Furthermore, because our model structure assumes market efficiency, the responses of returns in periods $t+1$ and beyond will be zero. Thus, we conclude that an item is value-relevant if the contemporaneous response is positive and significant.

In contrast, the dynamic responses for persistence and predictive value occur for multiple periods and are more complex. We investigate persistence by calculating the future responses of each component of non-owner changes in equity (i.e., in periods $t+1$ through $t+5$) to a shock to itself in period t. For example, the persistence of SI is measured as the following series of derivatives: $\partial SI_{t+1}/\partial z_t^{SI}$, $\partial SI_{t+2}/\partial z_t^{SI}$, $\ldots$, $\partial SI_{t+5}/\partial z_t^{SI}$. We conclude that an item exhibits positive

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[19] In order to jointly estimate the system, we rewrite the returns equation to reflect each shock as the actual value less the expected value, as shown below for the model in (1):

$$R_{it} = \alpha_0 + \alpha_N^0[NI_{it} - SI_{it} - (\beta_0 + \textstyle\sum_{\ell=1}^3 \beta_N^\ell (NI_{it-\ell} - SI_{it-\ell}) + \sum_{\ell=1}^3 \beta_S^\ell SI_{it-\ell} + \sum_{\ell=1}^3 \beta_O^\ell OCI_{it-\ell})] + \alpha_S^0[SI_{it} - (\theta_0 + \sum_{\ell=1}^3 \theta_N^\ell (NI_{it-\ell} - SI_{it-\ell}) + \sum_{\ell=1}^3 \theta_S^\ell SI_{it-\ell} + \sum_{\ell=1}^3 \theta_O^\ell OCI_{it-\ell})] + \alpha_O^0[OCI_{it} - (\gamma_0 + \sum_{\ell=1}^3 \gamma_N^\ell (NI_{it-\ell} - SI_{it-\ell}) + \sum_{\ell=1}^3 \gamma_S^\ell SI_{it-\ell} + \sum_{\ell=1}^3 \gamma_O^\ell OCI_{it-\ell})] + \alpha_M^0(MR_{it}) + z_{it}^R$$

where MR_{it} is the aggregate market return. Note that the parameters in the expectations substituted into the equation above are restricted to be equal to the parameters in the individual equations for $NI - SI$, SI, and OCI in (1). The formulation for the model in (2) is determined in a similar manner.

persistence if the responses are generally positive and significant, and if the cumulative response is also positive and significant. We conclude that an item exhibits zero persistence (i.e., is transitory) if the responses are not significantly different from zero, or if the cumulative response is not significantly different from zero. Finally, we conclude that an item exhibits negative persistence (i.e., is reversing) if the pattern includes responses that are negative and significant, and the cumulative response is also negative and significant.[20]

We measure the predictive value of OCI and SI (i.e., their ability to predict $NI - SI$ and/or CF) by calculating the responses of future $NI - SI$ and CF to OCI and SI shocks. For example, the predictive value of SI in the net income model is measured as the series of derivatives: $\partial(NI_{t+1} - SI_{t+1})/\partial z_t^{SI}$, $\partial(NI_{t+2} - SI_{t+2})/\partial z_t^{SI}$, $\ldots$, $\partial(NI_{t+5} - SI_{t+5})/\partial z_t^{SI}$. We conclude that OCI and/or SI have predictive value for a specified future period if the response is positive and significant for that period. If the cumulative response is also positive and significant, then we conclude that the shock has predictive value over the long run.

To further understand the intuition behind these derivatives, consider again the responses representing the predictive value of SI in the net income model. The response of $NI_{t+1} - SI_{t+1}$ to an SI shock in period t is simply the direct relation, $\partial(NI_{t+1} - SI_{t+1})/\partial z_t^{SI} = \beta_S^1$. However, consider the response of $NI_{t+2} - SI_{t+2}$ to the same z_t^{SI}. This response will still have a direct component, β_S^2, but will also include the indirect effects of the z_t^{SI} on $NI_{t+1} - SI_{t+1}$, SI_{t+1}, and OCI_{t+1}, all of which impact $NI_{t+2} - SI_{t+2}$ and are, in turn, impacted by z_t^{SI}. Specifically: $\partial(NI_{t+2} - SI_{t+2})/\partial z_t^{SI} = \beta_S^2 + \beta_N^1 \beta_S^1 + \beta_S^1 \theta_S^1 + \beta_O^1 \gamma_S^1$.

We test the statistical significance of each response (including the cumulative responses) using a Monte Carlo simulation due to the difficulty of obtaining analytical standard errors for the complex nonlinear combinations of the regression coefficients from the models in (1) and (2). This procedure is similar to that used in testing the significance of impulse responses in a vector autoregression analysis (see Hamilton 1994, 337). That is, we use the regression coefficients and variance-covariance matrices estimated for (1) and (2) to simulate an empirical distribution of the dynamic responses.

More specifically, we populate a vector with a random normal shock, and then pre-multiply the Cholesky decomposition of the estimated variance-covariance matrix by this vector to create a multivariate random normal shock. We then add this shock to the vector of estimated regression coefficients and use this new set of coefficients to generate a set of associated dynamic responses (via the partial derivatives). We then repeat the process 1,000 times. We report the means of the resulting distributions as our dynamic responses in Tables 4–6, and we use the standard deviation of each response distribution to determine statistical significance. We truncate the random normal shocks to avoid including simulated responses based on nonstationary sets of coefficients.[21]

Results

We discuss our results for value relevance, persistence, and predictive value with an emphasis on our findings related to OCI and SI. We compare these findings with the value relevance and persistence of $NI - SI$ and CF. Results for accruals are included for completeness but are not the focus of our study and thus will not be emphasized in our discussion.

In interpreting our results, it is important to note that we deflate the OCI, SI, and $NI - SI$ variables by average total assets. Thus, when we describe a response to an OCI, SI, or $NI - SI$

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[20] If OCI fully reverses over our time frame, then we would expect the period $t+1$ through $t+5$ responses to be negative and to fully offset the one-unit contemporaneous shock (i.e., the sum of the responses would equal −1).

[21] Other approaches to dealing with this issue are discussed by Kilian (1998).

TABLE 4

Value Relevance Results

Panel A: Net Income Model

Response of stock returns to an $NI - SI$ shock ($\partial R_t / z_t^{NI-SI}$)	2.018**
Response of stock returns to an SI shock ($\partial R_t / z_t^{SI}$)	1.958**
Response of stock returns to an OCI shock ($\partial R_t / z_t^{OCI}$)	1.399**

Panel B: Cash Flow Model

Response of stock returns to a CF shock ($\partial R_t / z_t^{CF}$)	2.206**
Response of stock returns to an ACC shock ($\partial R_t / z_t^{ACC}$)	1.849**
Response of stock returns to an SI shock ($\partial R_t / z_t^{SI}$)	2.106**
Response of stock returns to an OCI shock ($\partial R_t / z_t^{OCI}$)	1.518**

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*, ** For each response, indicates a probability of less than 10 percent and 5 percent, respectively, that the response is equal to zero.

This table presents the dynamic responses estimated for the net income model in (1) and the cash flow model in (2) over the 1986–2005 time frame. The dynamic responses for value relevance are the partial derivatives of R in period t, with respect to a shock in SI and OCI in period t (i.e., a z_t^{SI} or z_t^{OCI}).

Statistical significance is determined based on standard errors calculated using a Monte Carlo simulation, as described in the text. The responses reported are the means of these distributions.

The OCI data are hand-collected from company 10-K filings for 1998–2005, and calculated from Compustat data for 1986–1997. All variables, except stock returns, are deflated by average total assets. *R, NI, SI, CF,* and *ACC* are measured based on CRSP and Compustat data.

Variable Definitions

R = buy and hold stock returns cumulated over the period ending three months after the company's fiscal year-end;

NI = net income;

SI = special items;

CF = operating cash flows;

ACC = accruals; and

OCI = other comprehensive income, and is measured as the sum of the gains and losses related to the following four items: available-for-sale securities (*AFS*), foreign currency translations (*FC*), defined benefit retirement plans (*PEN*), and derivatives accounted for as cash flow hedges (*DER*).

shock, the shock is really to *OCI*, *SI*, or $NI - SI$ deflated by average total assets. However, for the sake of brevity, in our discussion we describe the shocks in terms of the numerator.

Value Relevance Responses

Table 4 presents results for value relevance. Panel A presents the results for the net income model in (1), and Panel B presents the results for the cash flow model in (2). The values can be interpreted as the response of stock returns to a 1 percent shock in each variable.

For the net income model, Table 4, Panel A shows that shocks to $NI - SI$, *SI*, and *OCI* are all positively and significantly associated with company stock returns. For example, a 1 percent increase in $NI - SI$ in period t is associated with a 2.018 percent increase in period t returns, while a 1 percent increase in *SI* (*OCI*) in period t is associated with a 1.958 (1.399) percent increase in period t returns. The value relevance of *SI* and $NI - SI$ are larger and statistically different from that of *OCI* ($p < 0.05$).

Panel B of Table 4 presents findings for the cash flow model. Similar to the net income model, shocks to all variables are positively and significantly associated with company stock returns. However, the responses of stock returns to *CF* and *SI* are again significantly larger than the response to *OCI* ($p < 0.05$). We conclude from this analysis that *OCI*, *SI*, *NI* – *SI*, and *CF* are all value-relevant, but that the impact of *OCI* is lower than that of the other variables.

Persistence Responses

Table 5 presents the dynamic responses for persistence. Panel A presents the responses from the net income model in (1) and Panel B presents the responses from the cash flow model in (2). The values can be interpreted as the response of each variable in periods t+1 through t+5 to a 1 percent shock in itself in period t.

The results in Table 5, Panel A show that *NI* – *SI* exhibits strong persistence, *SI* exhibits close to zero persistence (i.e., is transitory), and *OCI* exhibits negative persistence. Specifically, a 1 percent increase in *NI* – *SI* in period t is associated with a 0.540 percent increase in *NI* – *SI* in period t+1, followed by a 0.371 percent increase in period t+2, a 0.369 percent increase in period t+3, and so on. The cumulative response to the 1 percent period t shock in *NI* – *SI* is 1.825 percent. Thus *NI* – *SI* exhibits strong positive persistence, as found in many prior studies (see, e.g., Kormendi and Lipe 1987; Finger 1994; Fairfield et al. 1996).

In contrast, the responses of future *SI* to a contemporaneous *SI* shock exhibit negative responses in the early periods, followed by small positive and significant responses in the later periods. However, the cumulative responses are not significantly different from zero, suggesting that *SI* is transitory in nature. *OCI* exhibits yet another pattern. The responses of future *OCI* to a contemporaneous *OCI* shock are negative and significant for the first three periods. These results are consistent with the autocorrelations reported in Table 3, and suggest that *OCI* is not transitory, but instead exhibits negative persistence (i.e., reverses over time). Over the long run, the cumulative response is also negative and significant, but its relatively small magnitude suggests the reversal is only partial. We interpret this finding as evidence that many *OCI* gains and losses deferred in the balance sheet in AOCI do reverse, but do not reverse quickly or completely. However, our results do not allow us to unequivocally attribute these reversals either to recycling or to mean reversion in market values.

The results for the cash flow model in Table 5, Panel B are consistent with those from Panel A. That is, *CF* exhibits strong positive persistence, *SI* appears to be transitory, and *OCI* exhibits negative persistence. The *ACC* variable is similar to *CF*, in that it is persistent, but the magnitudes of the responses are significantly smaller than those for *CF* ($p < 0.05$).

Predictive Value Responses

Table 6 presents the dynamic responses for predictive value. Panel A presents the responses from the net income model in (1) and Panel B presents the responses from the cash flow model in (2). The responses can be interpreted as the response of *NI* – *SI* or *CF* in periods t+1 through t+5 to a 1 percent shock in *OCI* and *SI* in period t.

The results in Panel A of Table 6 show that *SI* is positively and significantly associated with future *NI* – *SI*, both period-by-period and cumulatively. We describe these results in terms of a decrease in *SI* because many special items are negative. Specifically, a 1 percent decrease in *SI* in period t is associated with a 0.419 percent decrease in *NI* – *SI* in period t+1, followed by a 0.308 percent decrease in period t+2, a 0.250 percent decrease in period t+3, and so on. The cumulative response to the 1 percent period t shock in *NI* – *SI* is a decrease of 1.391 percent, and is also significant. These findings indicate that *SI* has strong predictive value for future *NI* – *SI*. These results are consistent with Cready et al. (2010), who find a positive relation between negative special items and future earnings.

In contrast, *OCI* is positively and significantly associated with only one-period-ahead *NI* – *SI;* although the responses in period t+2 and beyond are positive, they are not significantly different

TABLE 5

Persistence Results

Panel A: Net Income Model

	Dynamic Responses in Period $t+k$					Cumulative Responses
	$k = 1$	$k = 2$	$k = 3$	$k = 4$	$k = 5$	
Response of $NI - SI$ to an $NI - SI$ shock ($\partial NI_{t+k} - SI_{t+k}/z_t^{NI-SI}$)	0.540**	0.371**	0.369**	0.302**	0.243**	1.825**
Response of SI to an SI shock ($\partial SI_{t+k}/z_t^{SI}$)	−0.001	−0.023	0.038*	0.010**	0.004	0.029
Response of OCI to an OCI shock ($\partial OCI_{t+k}/z_t^{OCI}$)	−0.033**	−0.040**	−0.025*	0.007	0.002	−0.089**

Panel B: Cash Flow Model

	Dynamic Responses in Period $t+k$					Cumulative Responses
	$k = 1$	$k = 2$	$k = 3$	$k = 4$	$k = 5$	
Response of CF to a CF shock ($\partial CF_{t+k}/z_t^{CF}$)	0.364**	0.361**	0.381**	0.287**	0.258**	1.651**
Response of ACC to an ACC shock ($\partial ACC_{t+k}/z_t^{ACC}$)	0.305**	0.146**	0.117**	0.068**	0.043**	0.679**
Response of SI to an SI shock ($\partial SI_{t+k}/z_t^{SI}$)	−0.005	−0.027	0.046**	0.010	0.006	0.029
Response of OCI to an OCI shock ($\partial OCI_{t+k}/z_t^{OCI}$)	−0.035**	−0.040**	−0.029**	0.007	0.002	−0.096**

*, ** For each response, indicates a probability of less than 10 percent and 5 percent, respectively, that the response is equal to zero.

This table presents the dynamic responses calculated from the regression coefficients estimated for the net income model in (1) and the cash flow model in (2) over the 1986–2005 time frame. The dynamic responses for persistence are the series of partial derivatives of each variable in period *t+k*, with respect to a shock in itself in period *t*. The cumulative responses are the sums of the period-by-period responses for each variable.

Statistical significance is determined based on standard errors calculated using a Monte Carlo simulation, as described in the text. The responses reported are the means of these distributions.

The OCI data are hand-collected from company 10-K filings for 1998–2005, and calculated from Compustat data for 1986–1997. All variables are deflated by average total assets. *NI*, *SI*, *CF*, and *ACC* are measured based on Compustat data.

Variable Definitions
NI = net income;
SI = special items;
CF = operating cash flows;
ACC = accruals; and
OCI = other comprehensive income, and is measured as the sum of the gains and losses related to the following four items: available-for-sale securities (*AFS*), foreign currency translations (*FC*), defined benefit retirement plans (*PEN*), and derivatives accounted for as cash flow hedges (*DER*).

TABLE 6

Predictive Value Results

Panel A: Net Income Model

	Dynamic Responses in Period $t+k$					Cumulative Responses
	$k = 1$	$k = 2$	$k = 3$	$k = 4$	$k = 5$	
Response of $NI - SI$ to an SI Shock ($\partial NI_{t+k} - SI_{t+k}/z_t^{SI}$)	0.419**	0.308**	0.250**	0.227**	0.186**	1.391**
Response of $NI - SI$ to an OCI Shock ($\partial NI_{t+k} - SI_{t+k}/z_t^{OCI}$)	0.101**	0.040	0.030	0.038	0.032	0.242

Panel B: Cash Flow Model

	Dynamic Responses in Period $t+k$					Cumulative Responses
	$k = 1$	$k = 2$	$k = 3$	$k = 4$	$k = 5$	
Response of CF to an SI Shock ($\partial CF_{t+k}/z_t^{SI}$)	0.302**	0.333**	0.261**	0.228**	0.208**	1.333**
Response of CF to an OCI Shock ($\partial CF_{t+k}/z_t^{OCI}$)	0.025	0.069**	0.046**	0.038	0.039	0.218**
Response of CF to an ACC Shock ($\partial CF_{t+k}/z_t^{ACC}$)	0.157**	0.115**	0.134**	0.131**	0.114**	0.651**

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*, ** For each response, indicates a probability of less than 10 percent and 5 percent, respectively, that the response is equal to zero.

This table presents the dynamic responses calculated from the regression coefficients estimated for the net income model in (1) and the cash flow model in (2) over the 1986–2005 time frame. The dynamic responses for predictive value are the series of partial derivatives of $NI - SI$ (or CF) in period $t+k$, with respect to a shock in SI and OCI in period t (i.e., a z_t^{SI} or z_t^{OCI}). The cumulative responses are the sums of the period-by-period responses.

Statistical significance is determined based on standard errors calculated using a Monte Carlo simulation, as described in the text. The responses reported are the means of these distributions.

The OCI data are hand-collected from company 10-K filings for 1998–2005, and calculated from Compustat data for 1986–1997. All variables are deflated by average total assets. NI, SI, CF, and ACC are measured based on Compustat data.

Variable Definitions

NI = net income;

SI = special items;

CF = operating cash flows;

ACC = accruals; and

OCI = other comprehensive income, and is measured as the sum of the gains and losses related to the following four items: available-for-sale securities (*AFS*), foreign currency translations (*FC*), defined benefit retirement plans (*PEN*), and derivatives accounted for as cash flow hedges (*DER*).

from zero. Further, the cumulative response is not significantly different from zero. These findings indicate that OCI may have predictive value for one-step-ahead $NI - SI$, but not for $NI - SI$ over the long run.

The results for the cash flow model in Table 6, Panel B show that the response of future cash flows to an SI shock is similar to the response of $NI - SI$. That is, an SI shock is positively and significantly associated with future cash flows, both period-by-period and cumulatively. In contrast, an OCI shock is positively but not significantly related to cash flows in period $t+1$, but positively and significantly related to cash flows in periods $t+2$ and $t+3$. The cumulative response of *CF* to an *OCI* shock is also positive and significant, although of a smaller magnitude than the cumulative response of *CF* to an *SI* shock (0.218 versus 1.333). Thus, we conclude that *OCI* tends to have positive predictive value for future *NI* – *SI* primarily in the short run, but for *CF* over the longer run.

In summary, our findings support the following three conclusions. Consistent with the earnings literature, *NI* – *SI* is persistent, has strong predictive value, and is value-relevant. *SI* exhibits close to zero persistence (i.e., is transitory), but has predictive value and is value-relevant. This overall pattern for *SI* is consistent with the various findings of Fairfield et al. (1996), Burgstahler et al. (2002), Dechow and Ge (2006), Fairfield et al. (2009), and Cready et al. (2010). Finally, *OCI* exhibits negative persistence (i.e., partially reverses over time), and has weaker predictive value for future *NI* – *SI* and *CF*, but is value-relevant. This overall pattern for *OCI* helps to reconcile the findings of Dhaliwal et al. (1999), Chambers et al. (2007), and Kanagaretnam et al. (2009).

Robustness Testing

We test robustness of the models in (1) and (2) related to five areas: model design, subsets of companies with certain characteristics, individual *OCI* components, choice of deflator, and estimation time frames. First, our model is designed such that the equations for *OCI*, *SI*, *NI* – *SI*, *ACC*, and *CF* are functions of only past values, which we deem appropriate for forecasting equations (Fairfield et al. 1996; Sloan 1996). However, prior research has documented a contemporaneous relation between special items and net income (Kinney and Trezevant 1997; Marquardt and Wiedman 2004; McVay 2006; Fan et al. 2010), and has also found evidence that companies engage in "cherry picking" by timing management choices about the sale of OCI-related items (Graham et al. 2005; Lee et al. 2006). We re-estimate several models that include contemporaneous relations among the variables, finding results that are very similar to those from our primary model.[22]

Second, studies have found differences in companies with certain characteristics, such as financial versus nonfinancial (Dhaliwal et al. 1999), and high versus low volatility companies (Hodder et al. 2006; Yen et al. 2007; Bamber et al. 2010). We re-estimate the models in (1) and (2) after excluding the 26 financial companies from the sample, and (separately) after excluding 22 high-volatility companies.[23] Results are consistent with those reported previously. In fact, the predictive value of *OCI* is stronger for both nonfinancial and low-volatility companies.

Third, we separately estimate the models in (1) and (2) for three of the *OCI* components: *AFS*, *FC*, and *PEN* (e.g., Dhaliwal et al. 1999; Chambers et al. 2007), after eliminating companies with inadequate time-series data for that component.[24] For all three components, our findings for value relevance are consistent with the results reported previously. However, our persistence results for *AFS* differ from the main results, in that *AFS* appears more transitory and its cumulative predictive value for future cash flows is not statistically significant. It is important to note that, although available-for-sale securities tend to exhibit more recycling than other *OCI* components, it is difficult to draw definitive conclusions about what these results suggest about recycling. We anticipate that improved disclosures about recycling details resulting from the FASB/IASB project on financial statement presentation may allow more research in this area.

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[22] Note that, although we estimated regressions that included contemporaneous relations, we appropriately did not include the coefficients on the contemporaneous variables in our dynamic response calculations for persistence or predictive value.

[23] To identify companies with significantly higher OCI-induced volatility, we compare the volatility of net income to the volatility of comprehensive income for each sample company over the 1986–2005 time frame. Following Barth et al. (1995) and Hodder et al. (2006), we calculate an F-test of the equality of the variances at a 10 percent significance level.

[24] We do not examine the derivatives component because we did not have a long enough time-series to run it separately in this model. Campbell (2010) examines the short-run predictive power of cumulative unrealized cash flow hedge gains and losses, and finds a negative association between unrealized hedging gains and future gross profit.

Fourth, many value relevance studies deflate their independent variables by beginning market value of equity, while most persistence and forecasting studies use average total assets. One problem with using the market value of equity as a deflator is that it exhibits more variability over time than total assets, and this variation is likely to be related to future cash flows. Thus, we use average total assets as a deflator in our reported analyses. When we run the model using beginning market value of equity as the deflator, the value relevance and persistence results are consistent. Not surprisingly, the cash flow predictive value results are weaker.

Fifth, we estimate the models in (1) and (2) using three alternative time frames: 1986–2005 (reported), 1994–2005, and 1998–2005, which correspond to the years in which SFAS Nos. 87, 115, and 130, respectively, became effective. The results for the 1994–2005 and 1998–2005 time frames are consistent with those reported previously. This finding further supports the idea that our reported results are not driven by the inclusion of *as if* OCI data before 1998.

V. DISCUSSION AND CONCLUSIONS

We report the results of a comprehensive study to compare OCI and SI gains and losses in terms of value relevance, persistence, and predictive value. Our study extends the literature on the usefulness of disaggregating components of income by comparing OCI gains and losses with SI gains and losses. We also extend the literature on the value relevance of OCI gains and losses, which has found mixed results. We document three important findings. First, both OCI and SI are value-relevant, but the value relevance of OCI is smaller. Second, OCI and SI differ in terms of persistence: SI exhibits zero persistence (i.e., is transitory), while OCI exhibits negative persistence. Third, OCI and SI also differ in terms of predictive value: SI is consistently positively associated with both future net income and future cash flows. In contrast, OCI predicts future net income and cash flows for some but not all periods, and the magnitude of the relation is smaller than for SI.

We believe that our results have important implications for standard-setting. Specifically, our findings that OCI and SI gains and losses differ in terms of their persistence, predictive value, and value relevance, can be viewed as support for making disaggregated data about these gains and losses available to users. Disaggregated data about OCI gains and losses could be made available while maintaining the current separation between net income and OCI, or via disclosures if OCI gains and losses were to be incorporated into net income line items on the face of the statement of comprehensive income. Regardless, we conclude that presenting disaggregated information related to both SI and OCI gains and losses should remain an important goal for standard-setters.

In addition, the mixed implications of our results regarding whether to recognize OCI and SI gains and losses in net income emphasize the importance of the decision criteria upon which to base this decision. For example, imposing the current emphasis of standard-setters on predictive value would lead us to interpret our results as suggesting that SI gains and losses are better suited for inclusion in net income than are OCI gains and losses. Alternatively, increased emphasis on persistence would require judgments about whether transitory items such as SI gains and losses should be included as part of net income, and about how to treat items with negative persistence, such as OCI gains and losses.

Our results suggest standard setters may want to consider emphasizing both persistence and predictive value. Prior researchers (Kormendi and Lipe 1987; Ohlson 1999) have made the link between the persistence of an item (i.e., association with future values of itself) and valuation. Given that our value relevance tests show a significant positive association between returns and SI shocks—and that the magnitude of this association is almost as large as that for NI − SI—these prior studies would suggest that SI would exhibit strong persistence (i.e., association with future SI). However, our study does not find that SI is persistent. Rather, our results suggest that SI may be important in valuation due to its association with future net income and/or cash flows (i.e., its predictive value), rather than its association with future values of SI (i.e., its persistence).

A limitation of our study is that OCI may exhibit negative persistence for at least two different reasons. An OCI gain or loss may reverse if market conditions change before the underlying balance sheet item is sold or settled. Alternatively, the negative persistence may be due to the recycling of gains and losses out of AOCI and into net income. Because recycling details are only intermittently available for a small proportion of our sample, it is difficult to distinguish between these two possibilities. Research in this area could be extended by collecting data for a sample of firms that report the recycling details for OCI components.

Another limitation of our study is that we have selected a sample with a long time-series in order to estimate persistence and predictive value. Therefore, our results are most generalizable to larger companies that continuously report OCI. However, the sample selection process is also a strength of the study, in that its focus is on companies with material and regular amounts of OCI. This focus increases confidence that any lack of value relevance, predictive value, or persistence is unlikely to be due to immaterial and/or intermittent amounts of OCI.

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APPENDIX A

Seemingly Unrelated Regression Results for Net Income Model

Panel A: Dependent Variable = R_{it}

$(NI_{it} - SI_{it}) - E(NI_{it} - SI_{it})$	$SI_{it} - E(SI_{it})$	$OCI_{it} - E(OCI_{it})$	Adj. R^2
2.026**	1.966**	1.417**	17.3%

Panel B: Dependent Variable = $NI_{it} - SI_{it}$

$(NI_{it-1} - SI_{it-1})$	$(NI_{it-2} - SI_{it-2})$	$(NI_{it-3} - SI_{it-3})$	SI_{it-1}	SI_{it-2}	SI_{it-3}	OCI_{it-1}	OCI_{it-2}	OCI_{it-3}	Adj. R^2
0.541**	0.079**	0.122**	0.419**	0.082**	0.063**	0.103**	−0.028	0.016	36.7%

Panel C: Dependent Variable = SI_{it}

$(NI_{it-1} - SI_{it-1})$	$(NI_{it-2} - SI_{it-2})$	$(NI_{it-3} - SI_{it-3})$	SI_{it-1}	SI_{it-2}	SI_{it-3}	OCI_{it-1}	OCI_{it-2}	OCI_{it-3}	Adj. R^2
0.004	0.008	0.007	0.0002	−0.024	0.034*	0.043	−0.037	0.015	0.1%

Panel D: Dependent Variable = OCI_{it}

$(NI_{it-1} - SI_{it-1})$	$(NI_{it-2} - SI_{it-2})$	$(NI_{it-3} - SI_{it-3})$	SI_{it-1}	SI_{it-2}	SI_{it-3}	OCI_{it-1}	OCI_{it-2}	OCI_{it-3}	Adj. R^2
−0.014**	−0.009	0.009	−0.0002	−0.016*	0.015*	−0.032*	−0.040**	−0.025	0.6%

*, ** Indicates a probability of less than 10 percent and 5 percent, respectively, that the coefficient is equal to zero.

Shown are the regression coefficients from estimating the net income model in (1) as a seemingly unrelated regression over the 1986 to 2005 time frame. This balanced panel includes 236 companies with the required data. All variables except for stock returns are deflated by average total assets. Included in the returns regression but not reported is the contemporaneous annual aggregate market return.

Variable Definitions

R = buy and hold stock returns cumulated over the period ending three months after the company's fiscal year-end;

$NI - SI$ = net income less special items;

SI = special items; and

OCI = total other comprehensive income.

APPENDIX B

Seemingly Unrelated Regression Results for Cash Flow Model

Panel A: Dependent Variable = R_{it}

$CF_{it} - E(CF_{it})$	$ACC_{it} - E(ACC_{it})$	$SI_{it} - E(SI_{it})$	$OCI_{it} - E(OCI_{it})$	Adj. R^2
2.203**	1.847**	2.104**	1.513**	17.0%

Panel B: Dependent Variable = CF_{it}

CF_{it-1}	CF_{it-2}	CF_{it-3}	ACC_{it-1}	ACC_{it-2}	ACC_{it-3}	SI_{it-1}	SI_{it-2}	SI_{it-3}	OCI_{it-1}	OCI_{it-2}	OCI_{it-3}	Adj. R^2
0.364**	0.200**	0.171**	0.157**	0.006	0.030	0.302**	0.204**	0.088**	0.025	0.035	0.023	25.8%

Panel C: Dependent Variable = ACC_{it}

CF_{it-1}	CF_{it-2}	CF_{it-3}	ACC_{it-1}	ACC_{it-2}	ACC_{it-3}	SI_{it-1}	SI_{it-2}	SI_{it-3}	OCI_{it-1}	OCI_{it-2}	OCI_{it-3}	Adj. R^2
0.189**	−0.089**	−0.036*	0.305**	0.022	0.056**	0.137**	−0.090**	−0.010	0.097**	−0.031	0.022	7.9%

Panel D: Dependent Variable = SI_{it}

CF_{it-1}	CF_{it-2}	CF_{it-3}	ACC_{it-1}	ACC_{it-2}	ACC_{it-3}	SI_{it-1}	SI_{it-2}	SI_{it-3}	OCI_{it-1}	OCI_{it-2}	OCI_{it-3}	Adj. R^2
−0.003	0.001	0.018	0.015	0.013	−0.0003	−0.005	−0.030	0.043**	0.038	−0.042	0.018	0.1%

Panel E: Dependent Variable = OCI_{it}

CF_{it-1}	CF_{it-2}	CF_{it-3}	ACC_{it-1}	ACC_{it-2}	ACC_{it-3}	SI_{it-1}	SI_{it-2}	SI_{it-3}	OCI_{it-1}	OCI_{it-2}	OCI_{it-3}	Adj. R^2
−0.016**	−0.004	0.010	−0.016**	−0.015**	0.007	−0.001	−0.012	0.016*	−0.035**	−0.041**	−0.031*	0.7%

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*, ** Indicates a probability of less than 10 percent and 5 percent, respectively, that the coefficient is equal to zero.

Shown are the regression coefficients from estimating the cash flow model in (2) as a seemingly unrelated regression over the 1986 to 2005 time frame. This balanced panel includes 236 companies with the required data. All variables except for stock returns are deflated by average total assets. Included in the returns regression but not reported is the contemporaneous annual aggregate market return.

Variable Definitions

R = buy and hold stock returns cumulated over the period ending three months after the company's fiscal year-end;

CF = operating cash flows;

ACC = total accruals;

SI = special items; and

OCI = total other comprehensive income.

APPENDIX C

Partial Derivatives Representing Value Relevance, Persistence, and Predictive Value for Model in (1)

Panel A: Partial Derivatives Representing Value Relevance

	$k = 0$	**$k = 1$**	**$k = 2$**	**$k = 3$**	**$k = 4$**	**$k = 5$**
NI − SI	$\frac{\partial(R_t)}{\partial z_t^{NI-SI}}$	NA	NA	NA	NA	NA
SI	$\frac{\partial(R_t)}{\partial z_t^{SI}}$	NA	NA	NA	NA	NA
OCI	$\frac{\partial(R_t)}{\partial z_t^{OCI}}$	NA	NA	NA	NA	NA

Panel B: Partial Derivatives Representing Persistence

	$k = 0$	**$k = 1$**	**$k = 2$**	**$k = 3$**	**$k = 4$**	**$k = 5$**
NI − SI	NA	$\frac{\partial(NI_{t+1} - SI_{t+1})}{\partial z_t^{NI-SI}}$	$\frac{\partial(NI_{t+2} - SI_{t+2})}{\partial z_t^{NI-SI}}$	$\frac{\partial(NI_{t+3} - SI_{t+3})}{\partial z_t^{NI-SI}}$	$\frac{\partial(NI_{t+4} - SI_{t+4})}{\partial z_t^{NI-SI}}$	$\frac{\partial(NI_{t+5} - SI_{t+5})}{\partial z_t^{NI-SI}}$
SI	NA	$\frac{\partial(SI_{t+1})}{\partial z_t^{SI}}$	$\frac{\partial(SI_{t+2})}{\partial z_t^{SI}}$	$\frac{\partial(SI_{t+3})}{\partial z_t^{SI}}$	$\frac{\partial(SI_{t+4})}{\partial z_t^{SI}}$	$\frac{\partial(SI_{t+5})}{\partial z_t^{SI}}$
OCI	NA	$\frac{\partial(OCI_{t+1})}{\partial z_t^{OCI}}$	$\frac{\partial(OCI_{t+2})}{\partial z_t^{OCI}}$	$\frac{\partial(OCI_{t+3})}{\partial z_t^{OCI}}$	$\frac{\partial(OCI_{t+4})}{\partial z_t^{OCI}}$	$\frac{\partial(OCI_{t+5})}{\partial z_t^{OCI}}$

Panel C: Partial Derivatives Representing Predictive Value

	$k = 0$	**$k = 1$**	**$k = 2$**	**$k = 3$**	**$k = 4$**	**$k = 5$**
SI	NA	$\frac{\partial(NI_{t+1} - SI_{t+1})}{\partial z_t^{SI}}$	$\frac{\partial(NI_{t+2} - SI_{t+2})}{\partial z_t^{SI}}$	$\frac{\partial(NI_{t+3} - SI_{t+3})}{\partial z_t^{SI}}$	$\frac{\partial(NI_{t+4} - SI_{t+4})}{\partial z_t^{SI}}$	$\frac{\partial(NI_{t+5} - SI_{t+5})}{\partial z_t^{SI}}$
OCI	NA	$\frac{\partial(NI_{t+1} - SI_{t+1})}{\partial z_t^{OCI}}$	$\frac{\partial(NI_{t+2} - SI_{t+2})}{\partial z_t^{OCI}}$	$\frac{\partial(NI_{t+3} - SI_{t+3})}{\partial z_t^{OCI}}$	$\frac{\partial(NI_{t+4} - SI_{t+4})}{\partial z_t^{OCI}}$	$\frac{\partial(NI_{t+5} - SI_{t+5})}{\partial z_t^{OCI}}$

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Judging the Relevance of Fair Value for Financial Instruments

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ABSTRACT: We conduct three experiments to test if investors' views about fair value are contingent on whether the financial instrument in question is an asset or liability, whether fair values produce gains or losses, and whether the item will or will not be sold/settled soon. We draw on counterfactual reasoning theory from psychology, which suggests that these factors are likely to influence whether investors consider fair value as providing information about forgone opportunities. The latter, in turn, is predicted to influence investors' fair value relevance judgments. Results are generally supportive of the notion that judgments about the relevance of fair value are contingent. Attempts to influence investors' fair value relevance judgments by providing them with information about forgone opportunities are met with mixed success. In particular, our results are sensitive to the type of information provided and indicate the difficulty of overcoming investors' (apparent) strong beliefs about fair value.

Keywords: *fair value; relevance; forgone opportunities; counterfactual reasoning.*

Data Availability: *Contact the authors.*

I. INTRODUCTION

For some time, a debate has existed on the relevance of fair value for the valuation of financial instruments. Proponents argue that financial statement measures based on prices that reflect the current market assessment—and thus lead to fair value gains and losses—inform investors about forgone opportunities arising from management's decision to continue to hold assets or owe liabilities. These forgone opportunities are viewed as pertinent, as they allow management's previous decisions to be evaluated and the value of the firm to be

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reassessed.[1] The premise of our study is that individuals' views about the relevance of fair value are not unwavering, but depend on the specific context in which they occur.

We conduct multiple experiments to investigate whether and how investors' judgments of fair value relevance for financial instruments are sensitive to three contexts: whether fair values lead to losses versus gains; whether fair values are applied to assets versus liabilities; and whether management intends to sell/settle soon versus hold to maturity. We draw on counterfactual reasoning theory (Roese 1997) to posit that these contexts capture three underlying constructs—namely, the desirability of the outcome, the mutability of the item, and the perceived closeness of the outcome, respectively—that are likely to influence whether investors consider forgone opportunities and, thus, their fair value relevance judgments.

Understanding how investors judge the relevance of fair value is important for several reasons. First, although the Financial Accounting Standards Board (FASB) has embraced fair value as a measurement attribute,[2] the use of fair values has long been debated (Laux and Leuz 2009). The recent economic crisis has escalated the focus on fair value accounting, providing impetus for the FASB to address the accounting model for financial instruments in its recent Proposed Accounting Standards Update on accounting for financial instruments (FASB 2010). As part of this effort, the FASB is considering, for example, if fair value measurement should depend on whether the instrument is a financial asset or liability or whether the entity intends to hold or sell/settle the financial instrument. Our experiments allow us to provide timely information to standard-setters deliberating these issues.

Second, very little research considers how investors judge the relevance of fair value. Existing archival research is not directly on point to the relevance notion, as it generally involves a joint test of the relevance and reliability of the disclosed fair values of financial assets and liabilities. Stated differently, this research assumes (explicitly or implicitly) at least a minimum level of relevance, and investigates cross-sectional differences in the reliability of those estimates. Variation in investors' assessments of relevance is rarely mentioned and never investigated. This archival research examines the association between fair values and equity prices (e.g., Barth 1994; Barth et al. 1996; Eccher et al. 1996; Nelson 1996; Barth et al. 2008) and, more recently, notions of interest and credit risk (e.g., Hodder et al. 2006; Blankespoor et al. 2010). Research using experimental methods examines how financial statement presentation affects investors' interpretation of the reliability of fair value information (Clor-Proell et al. 2010) and whether investors properly assess a company's credit risk from recognized fair value gains and losses and supporting disclosures (Gaynor et al. 2011).

In our first experiment, we focus on a fixed-rate security and manipulate whether investor participants are asked to consider the financial instrument as an asset (i.e., investment in bond) or liability (i.e., bond payable) and whether the outcome from a subsequent interest rate change results in a fair value gain or loss. Counterfactual reasoning theory predicts that investors should consider fair value as more relevant in the case of losses (i.e., a more undesirable outcome than gains) and in the case of assets (i.e., a more mutable, or changeable, item than liabilities). The results show that participants consider fair value to be more relevant for assets than liabilities, as predicted, but do not differentiate between gains and losses in those relevance judgments. Interestingly, though, the results show that investors are more likely to adjust firm valuations when there are fair value gains versus losses for the financial asset than for the financial liability.

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[1] See Hague and Willis (1999) for a summary of these viewpoints.

[2] Fair value measurement is currently used for employee stock options (Statement of Financial Accounting Standards (SFAS) No. 123R; FASB 2004), business acquisitions (SFAS No. 141R, FASB 2007a), and most investments (SFAS No. 115; FASB 1993). Companies also have the option to record financial instruments, including mortgage servicing rights, at fair value (SFAS No. 156 and SFAS No. 159; FASB 2006a, 2007b). Because of the increasing prevalence of fair value measurement, the FASB provides guidance on how to determine fair value under various circumstances (SFAS No. 157; FASB 2006b).

In experiment two, we again manipulate whether the item is an asset or liability and also include a manipulation of time to realization—that is, management intends either to hold the instrument to maturity or to sell/settle the instrument soon. Counterfactual reasoning theory predicts that investors are likely to judge fair value as more relevant when the item is to be sold soon (i.e., when the event is close in time) versus held to maturity. In this second experiment, we also vary the presence or absence of additional information about fair value and forgone opportunities, consistent with the arguments of fair value proponents. Providing this information should mitigate the hypothesized differences in judged relevance of fair value. Results show that investors judge fair value as more relevant when the instrument is to be sold/settled soon than when it is to be held to maturity, as expected. This finding holds for both financial assets and liabilities. However, our results also reveal that providing investors with the explanatory information about forgone opportunities does not influence their fair value judgments.

Because the information about forgone opportunities did not have the intended effect, we conduct a third experiment in which we make this manipulation stronger by also indicating how different actions on the part of firm management would have avoided the fair value loss. That is, we also explicitly provide the counterfactual. We again manipulate the time to realization but narrow our focus to only financial liabilities. Results show, as predicted, that the additional counterfactual information has no effect when financial liabilities are to be settled soon. However, when the financial liabilities are to be held to maturity, providing the additional information does increase participants' tendency to choose fair value as the most relevant measure for these instruments, as predicted. Although the additional counterfactual information works as intended, additional evidence suggests a potentially unintended consequence. Namely, some results are suggestive of participants viewing the counterfactual information as depicting an unfair scenario in which to evaluate the company and, therefore, should not be considered when re-evaluating the company's valuation.

Conducting experiments to examine issues pertaining to investors' judgments about the relevance of fair value affords a number of advantages. First, we are able to leverage the strength of experimental methods by holding constant the characteristics of the financial instrument (i.e., a publicly traded fixed-rate security) for which there is a fair value change and focusing on its position in the balance sheet (asset or liability) or realization time frame (hold to maturity or sell/settle soon). Second, experimentation permits us to directly measure investors' beliefs about the relevance of fair value and their perceptions of its effect on firm value. These measurements are important, as they allow us to test ideas more directly than by using security prices and inferring investors' judgments. Third, we are able to study how participants react to the value of items that may be difficult to examine using archival methods. Although many assets have been recognized at fair value for a number of years (e.g., investments in equity and debt securities under SFAS No. 115 [FASB 1993]), fewer liabilities have been recorded at fair value (Zion et al. 2008). In addition, some items are recorded at fair value because of mandatory accounting standards (e.g., SFAS No. 115; FASB 1993), and other items recorded at fair value by choice (e.g., SFAS No. 159; FASB 2007b). Furthermore, some items are recorded at fair value only because they are part of a derivative hedging transaction (SFAS No. 133; FASB 1998). This diversity in the frequency and circumstances of fair value measurement makes examining the question of fair value relevance arguably more difficult with archival methods.

Our results also have several important implications. From an investor standpoint, our study suggests that investors' fair value judgments are contingent. That is, they depend on whether the item in question is an asset or liability and also on whether the item is to be sold/settled soon or held to maturity. From the viewpoint of standard-setters, our findings reinforce the notion that financial statement context (e.g., asset versus liability) can significantly influence whether investors consider forgone opportunities in their fair value relevance and firm valuation judgments.[3] Accordingly, our study indicates that these issues might have far-reaching effects as they deliberate proposed changes to accounting for financial instruments (FASB 2010). Moreover, because our attempts to alter investors' judgments by providing additional information about forgone opportunities and fair values are mixed in their success, our results suggest the difficulty of overcoming the (apparent) strong beliefs investors have about fair value relevance. This finding also should be of importance to standard-setters and regulators as they consider additional fair value reporting requirements.

In the next section, we present theoretical arguments in support of our predictions. Sections III through V describe and present the results for each of our three experiments. Section VI provides additional data to rule out alternative explanations and Section VII concludes.

II. THEORY AND PREDICTIONS

Relevance of Fair Value

Fair value proponents maintain that, no matter the circumstance, fair value provides information about *forgone* opportunities that affect the economics of the firm (Hague and Willis 1999). That is, proponents of fair value would argue that such information is always relevant to evaluating a firm.

To be concrete, consider the following example. Company X issues bonds payable at par in the amount of $1,000,000. Two years after issuing the bonds, interest rates fall and so the fair value of the bonds is $1,200,000. From a discounted cash flow perspective, although the cash outflows have not changed, the discount rate has decreased. This denominator change leads to a greater negative present value associated with Company X having debt with fixed cash outflows—that is, it leads to a fair value loss. A fair value advocate would argue that the $200,000 loss is always relevant to the evaluation of the firm as it represents a forgone opportunity—that is, the present value of the additional interest cost (i.e., above current market rates) that Company X will pay over the remaining term of the bond, essentially because Company X did not refinance before rates changed (Hague and Willis 1999). Accordingly, fair value advocates would maintain that Company X's valuation should decrease as its cash flows are higher than an otherwise identical company (say, Company Y) that financed after the rate decrease. Stated differently, at the end of the financing period, Company X's cash balance will be lower than Company Y's (because X is paying a higher interest rate) and, thus, each firm's valuation should reflect this real economic difference.[4]

If investors follow the logic of the fair value advocate and consider fair value gains and losses as representing forgone opportunities, they are essentially engaging in a process that psychologists call counterfactual reasoning (Roese 1997). In this type of reasoning, individuals "undo" outcomes by changing (or mutating) the cause that led to them. For example, if only the driver had not taken an unusual route home late at night, he would not have gotten into an accident. In the fair value domain, the calculation of fair value is based on the same type of simulation as counterfactual reasoning—"undoing" the actual contractual interest rate and replacing it with the current market rate of interest that the company would be paying if management had undertaken an alternative set of actions (i.e., the forgone opportunity). As the above numerical example illustrates, determining the amount of the fair value gain or loss is fairly mechanical once an interest (or discount) rate change occurs. The more subtle effect is whether the investor considers the fair value gain or loss as a forgone opportunity and thus relevant to evaluating the firm. If investors do (do not) follow a process similar to counterfactual reasoning, they are more (are less) likely to judge fair value measurements as relevant.

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[3] Our focus differs from the notion of financial statement classification in Hopkins (1996). In that study, classification refers to management's decision to report the same underlying item in different financial statement categories. In contrast, we examine how assessing opposite sides of the same economic transaction can affect investors' judgments about fair value relevance.

[4] Fair value gains and losses provide information about the value of forgone opportunities, which are sunk costs and, thus, cannot be recovered. This is in contrast to information about the fair values of assets and liabilities that represent the opportunity to sell or settle in the future. Stated differently, Company X cannot, at this point, refinance without realizing the fair value loss of $200,000. If they were to refinance $1,000,000 at current (lower) rates, then they would have to settle the original $1,000,000 bonds at $1,200,000. Indeed, the opportunity to refinance at favorable rates (without penalty) is gone once interest rates change. Accordingly, although fair value gains and losses are irrelevant for future decisions (i.e., they cannot be recovered), they are relevant for judging the performance of the company—the focus of our study.

Thinking about fair value in terms of counterfactual reasoning is helpful, as this theory suggests *when* investors' fair value judgments are likely to depend on context. Prior research in psychology indicates that counterfactual thinking is more likely when events are seen as abnormal versus normal, when negative rather than positive events occur, when the outcome or antecedent is mutable or changeable, or when the outcome is close versus more distant in time (Roese and Olson 1995). Drawing on this research, we identify three fair value contexts for financial instruments—namely, assets versus liabilities, gains versus losses, and held to maturity versus sold/settled soon—that we posit will cause investors to change their fair value relevance judgments.[5] That is, we predict that investors' views about the relevance of fair value will not be unwavering, as proponents of fair value would maintain, but rather will be contingent on context.

Relevance of Fair Value Depending on Context

Fair value accounting is currently being used for financial instruments that are either assets or liabilities (but not for equity items). In addition, fair value accounting produces both gains and losses. Accordingly, a natural question is whether investors reason differently about the relevance of fair value for assets versus liabilities and for gains versus losses. Counterfactual reasoning theory suggests that investors treat these situations differently.

Turning first to gains and losses, prior literature (e.g., Roese 1997) indicates that counterfactual reasoning is more likely when undesirable outcomes occur. Here, individuals tend to evaluate the undesirable outcome by determining how easy it is to mentally undo it. In the fair value context, this would entail reasoning about how the fair value loss could have been avoided. In contrast, counterfactual reasoning is less likely with desirable outcomes like fair value gains. In the case of such desirable outcomes, individuals have less need to understand the cause of the gain and are unlikely to mentally undo the outcome (Roese 1997). Accordingly, we hypothesize:

H1: Individuals will judge fair value losses as more relevant than fair value gains.

In the context of assets versus liabilities, counterfactual reasoning theory suggests that the more mutable an item is (i.e., the easier an outcome can be undone), the more likely an individual will engage in counterfactual reasoning (McGill and Tenbrunsel 2000). For example, if a parachuter falls to his death, individuals are more likely to consider mutable factors in considering how he could have avoided death. That is, "if only he had rechecked the safety cord before jumping" is more likely to be considered (i.e., it is more mutable) than "if only gravity were not at work."

We predict that, in the eyes of investors, financial assets are perceived to be more mutable than financial liabilities. In other words, it is easier to consider an alternative set of actions for assets than for liabilities. This idea comes from the line of reasoning that individuals generally think they can more easily sell, for example, a bond investment than they can settle a home loan. That is, it is easier for them to simulate an alternative set of actions for (i.e., counterfactually reason about) assets than liabilities.[6] Accordingly, we hypothesize:

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[5] Although these factors have potential interaction effects, we develop our predictions considering each factor separately for brevity and clarity. We consider their interactions, as applicable, in the context of each experiment.

H2: Individuals will judge the fair value of financial assets as more relevant than the fair value of financial liabilities.

Finally, we posit that management's intent likely influences investors' judgments about fair value relevance. Research shows that perceived closeness to an outcome affects whether individuals engage in counterfactual reasoning (Meyers-Levy and Maheswaran 1992). For example, a traveler who misses his/her flight by five minutes is more likely to engage in counterfactual reasoning (i.e., "if only I had run the yellow stop light, I'd have made it to the gate on time") than a traveler who misses the flight by one hour. Drawing on this idea, we maintain that individuals will be more inclined to think about "if only" when the financial instrument is to be sold/settled soon as compared to when it is to be held to maturity. Counterfactual reasoning seems particularly likely here, particularly in the case of loss outcomes. Individuals will likely think, for example, "if only the company had sold the investment before the fair value decreased, they would not be in this position today." Accordingly, we hypothesize:

H3: Individuals will judge the fair value of financial instruments that are to be sold/settled soon as more relevant than those that are to be held to maturity.

Changing Investor Judgments about Fair Value Relevance

Because we conjecture that investors' judgments about fair value relevance will depend on the context, we believe it is possible to desensitize their judgments to context (Arkes 1991). In particular, we surmise that providing information about forgone opportunities should influence investors' understanding of the fair value change and, ultimately, will influence their fair value relevance judgments. This approach of providing individuals with a summary of the information that they may not normally consider is frequently employed as a "fix" in various decision settings (Arkes 1991). We summarize our expectations in the following hypothesis.

H4: Individuals will judge the relevance of fair value for financial instruments as greater when they are given information about forgone alternatives.

III. EXPERIMENT ONE

Design and Participants

Our first experiment tests the idea that investors judge gains differently from losses (H1) and financial assets differently from financial liabilities (H2). We employ a 2 × 2 design, in which we vary, between-participants, whether the financial instrument is an asset (i.e., investment in bond) or a liability (i.e., bond payable) and whether the outcome from a subsequent interest rate change leads to a fair value loss or gain.[7] Participants were randomly assigned to one condition.

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[6] Another way to view these arguments is in light of research showing that individuals are more motivated to generate counterfactuals when their involvement with an issue is high rather than when it is low (Gleicher et al. 1990; Meyers-Levy and Maheswaran 1992). Arguably, individuals are more "cognitively" involved with their financial assets than liabilities. That is, they regularly think about the fair value of retirement savings or the fair value of their house but less regularly, if ever, think about the fair value of their obligations. We verified this pattern of thinking with a group of participants with demographics similar to our study participants.

[7] We recognize that nonperformance risk would be incorporated in the increase/decrease in market interest rates and the associated change in the fair value of the financial instrument. Importantly, nonperformance risk affects fair value measurements of assets as well as liabilities (SFAS No. 157, ¶ A31; FASB 2006b).

Seventy-nine M.B.A. students participated in experiment one. Although the nature of the experiment did not allow us to collect demographic data from each participant, the program has students with an average of five years of full-time work experience, with a range from 1 to 15 years. All participants had completed coursework in financial accounting and finance.

We use M.B.A. students as proxies for reasonably informed investors. Following Libby et al. (2002), we match participants to the goals of the experiment and do not use more sophisticated participants than necessary to achieve those goals. Furthermore, the FASB, in its recent exposure draft on the new conceptual framework, assumes that users "have a reasonable knowledge of business and economic activities to be able to read a financial report" and "review and analyze the information with reasonable diligence" (FASB 2008, ¶QC24). *Ex ante*, we judged that general knowledge of accounting, business finance, and financial markets is necessary and sufficient for our participants to respond meaningfully to our materials.

Materials, Manipulations, and Questions

Participants serve in the role of a potential investor evaluating a firm (Alpha Company). Those in the *asset* financial instrument condition are informed that, in year 1, Alpha Company purchases at par ($10,000,000) an investment in publicly traded bonds issued by other companies. They are told that the bonds are fixed-rate investments, indicating that the cash received by Alpha is fixed. Participants in the *liability* financial instrument condition receive information that is a "mirror image" of the asset condition. Specifically, in year 1, Alpha issues at par ($10,000,000) fixed-rate, publicly traded bonds payable. The background materials ask participants to assume that the dollar amounts involved are highly significant.

After being given this information, participants in both the *asset* and *liability* conditions are told that, in year 3, a change in interest rates occurs. In the *asset-loss* (*asset-gain*) condition, interest rates increase (decrease); in the *liability-loss* (*liability-gain*) condition, interest rates decrease (increase). All participants are then informed that Alpha Company intends to hold the investment in bonds (or bonds payable, as applicable) until their maturity, which is years away. Finally, the financial instrument's maturity value is presented (always $10,000,000, independent of the condition) as well as the fair value of the same instrument (either $8,459,100 or $11,540,900, depending on the condition).[8] Exhibit 1 shows the information presented to participants in two of the four conditions.

Three aspects of our case materials avoid alternative explanations for our results. First, we use the phrase "maturity value" instead of "historical cost" in the actual instrument. This choice is designed to minimize participants bringing knowledge of accounting rules to the task, as our study is not about knowledge of such rules. Note that because the maturity value of a bond *issued at par* is equivalent to its historical cost, the two are the same. Second, if participants are using their knowledge of accounting rules to respond to the case, then we would observe results where no one considers fair value to be relevant (as historical cost would be the appropriate accounting for both the asset and liability).[9] We do not observe this result, suggesting this alternative explanation is not

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[8] The change in fair value for the gain and loss conditions is intentionally designed to be symmetric in dollar amount (i.e., at $1,540,900). This design feature ensures that the percentage change in fair value (relative to the original maturity amount) is held constant across all conditions. One consequence of doing this, however, is that the current interest rate that produces such a change will not be exactly symmetric. We believe that it is more important to control the dollar amount of symmetry (versus the interest rate producing that dollar amount) because the dollar amount is likely to be more obvious to participants. Indeed, participants could not infer the interest rates that produced such changes, as we do not include the maturity year for the financial instrument.

[9] The fair value option (SFAS No. 159) was very new at the time of the experiment, thereby rendering it unlikely participants had knowledge of it.

EXHIBIT 1

Experiment One Stimuli[a]

Asset/Loss Condition:

In Year 1, Alpha Company purchased an investment (i.e., asset) in publicly traded bonds issued by other companies. These bond investments were purchased at par ($10,000,000). These bonds are fixed-interest-rate investments, indicating that the cash interest income received by Alpha is fixed.

In Year 3, an increase in market interest rates occurred. As a result, the fair value of these bond investments decreased.

In Year 3, Alpha Company indicated that it would hold its investments in these debt securities until their maturity, which is still years away. That is, Alpha does not intend to sell these bond investments prior to maturity.

The maturity value and current fair value of these investments are as shown below:

Investment Maturity Value[b]	Investment Fair Value
$10,000,000	$8,459,100

Liability/Gain Condition:

In Year 1, Alpha Company issued publicly traded bonds payable (i.e., liability). These bonds payable were issued at par ($10,000,000). These bonds are fixed-interest-rate bonds, indicating that the cash interest expense paid by Alpha is fixed.

In Year 3, an increase in market interest rates occurred. As a result, the fair value of these bonds payable decreased.

In Year 3, Alpha Company indicated that it would hold its bonds payable until their maturity, which is still years away. That is, Alpha does not intend to settle (i.e., pay off) these bonds payable prior to maturity.

The maturity value and current fair value of these bonds payable are as shown below:

Bonds Payable Maturity Value[b]	Bonds Payable Fair Value
$10,000,000	$8,459,100

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[a] The exhibit shows the Asset/Loss and the Liability/Gain conditions. The fair value amount for the Asset/Gain and Liability/Loss conditions is $11,540,900.

[b] See Section III for discussion regarding the use of the phrase "maturity value."

plausible. Finally, the case materials specify that the financial instrument is publicly traded, thereby minimizing the possibility that our study participants somehow make inappropriate trade-offs between relevance and reliability (e.g., judge the fair value as not reliable and, therefore, not relevant). Market prices are generally considered to possess a high degree of reliability (e.g., Level 1 inputs [FASB 2006b]), and thus we hold reliability constant at a high level across all conditions.

After being presented with the information described above, participants answer four questions. The first two questions pertain to the relevance of the fair value measurement and differ in whether they focus on the fair value of the instrument itself or the resulting gain or loss from the fair value change. If H1 and H2 are valid, then we expect two main effects—one for the financial instrument variable and the other for the outcome variable. The first forced-choice question asks which of the two amounts (that participants saw earlier in the instrument—namely, historical cost or fair value) is more important to participants' current assessment of the financial position of Alpha Company at the end of year 3. The second question asks participants to indicate the extent to which the difference between the current fair value and historical cost of the financial instrument makes a difference in their assessment of the current performance of Alpha Company.[10] We use a 101-point continuous scale to elicit responses, with endpoints of "does not make a difference" (0) and "does make a difference" (100).

The final two questions pertain to whether the fair value change influences the value of the company. Although our hypotheses focus on investors' relevance judgments, it is important to also determine whether these differences in relevance judgments matter—that is, do they translate into differences in investors' assessments of the firm's value? We argue that higher relevance judgments for assets will translate into a greater value change (i.e., positive for fair value gains and negative for fair value losses) for assets than for liabilities. Indeed, we anticipate an interaction effect for the value questions.

One of the value questions asks participants whether the difference between the current fair value and the historical cost of the financial instrument makes Alpha Company better or worse off. The response scale here ranges from −50 ("makes Alpha significantly worse off") to 50 ("makes Alpha significantly better off"). The midpoint of the scale is 0, representing "makes Alpha neither worse off nor better off." The final question asks participants to make a judgment regarding the value they would place on the firm. They are told that any potential value change from the interest rate change is not already incorporated into the company's stock price. Three response options exist—(1) increases the value, (2) decreases the value, or (3) neither increases nor decreases the value. For those responding that the interest rate change either increases or decreases the value they would place on the company, participants also indicate the magnitude of this increase or decrease. Zero on the response scale represents "slightly increases (or decreases, as applicable) how much I value the firm," and 100 represents "greatly increases (or decreases, as applicable) how much I value the firm." Although these questions are seemingly quite similar, we ask both in the event that participants distinguish between a fair value loss or gain affecting the company but not its stock price.

Experiment One Results

Results for our first two questions are consistent with H2 but not H1. Question 1 asks participants which value—historical cost or current fair value—is more relevant. The results of this 2 × 2 categorical analysis of variance (ANOVA) are shown in Panels A and B of Table 1.

Results show that, as predicted in H2, over 70 percent of the participants (71.7 percent) judge fair value to be more relevant than historical cost for the investment in bond, while just less than 40 percent (39.4 percent) judge fair value more relevant for the bond payable ($\chi^2 = 8.42$, p-value $<$ 0.01). Contrary to H1, however, whether the interest rate change causes a gain or loss is not considered important to participants' relevance judgments, nor does it interact with the type of instrument being evaluated (both p-values $>$ 0.36).

For question 2, continuous-variable ANOVA results tabulated in Panels C and D of Table 1 reveal similar inferences. Participants judge the difference between current fair value and historical

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[10] We chose to ask the relevance questions using the phrases "makes a difference" and "important" because these phrases are used throughout the FASB's concept statement for this construct (SFAC No. 2, ¶46). However, to ensure that participants saw these phrases as being congruent with the construct of relevance, we asked a separate group of 53 M.B.A. students to indicate whether they agreed, disagreed, or had no opinion with respect to the statements "I believe when something is ***relevant***, it is important" and "I believe when something is ***relevant***, it makes a difference in a decision." The most frequent response given was "agree" (n = 31 and n = 36, respectively). This response was statistically more frequent than the other responses (both p-values < 0.10), validating our presumption that participants viewed the two phrases as referring to relevance. We also asked another group of 55 M.B.A. students to indicate which of six phrases (important, free from bias, makes a difference in a decision, can be confirmed, timely, and represents what it is supposed to) they considered to be the most descriptive of the term "relevance." The most frequent responses were "makes a difference" (n = 30), "important" (n = 11), and "represents what it is supposed to" (n = 11), again validating the equivalence of our experimental phrases with the notion of relevance.

TABLE 1

Experiment One
Results for Relevance Questions

Panel A: Descriptive Statistics for Question 1: Percentage of Participants Choosing Fair Value as the Most Relevant Measure

	Financial Instrument		
Outcome	**Asset**	**Liability**	**Row**
Loss	72.7% (16/22)	28.6% (4/14)	55.5% (20/36)
Gain	70.8% (17/24)	47.4% (9/19)	60.5% (26/43)
Column	71.7% (33/46)	39.4% (13/33)	

Panel B: Categorical Modeling Statistics for Question 1

Source	Chi-Square Statistic	df	Two-Tailed p-value
Financial Instrument	8.42	1	<0.01
Outcome	0.52	1	0.47
Financial Instrument × Outcome	0.82	1	0.36

Panel C: Descriptive Statistics for Question 2: Mean Response (Standard Deviation) for Relevance of the Difference between Fair Value and Historical Cost

	Financial Instrument		
Outcome	**Asset**	**Liability**	**Row**
Loss	61.23 (28.56)	37.14 (33.61)	51.86 (32.41)
Gain	48.33 (34.22)	35.00 (30.96)	42.44 (33.12)
Column	54.50 (31.96)	35.91 (31.61)	

Panel D: Analysis of Variance Statistics for Question 2

Source	Sums of Squares	df	Mean Square	F-statistic	Two-Tailed p-value
Financial Instrument	6629	1	6629	6.55	0.01
Outcome	1070	1	1070	1.38	0.31
Financial Instrument × Outcome	547	1	547	0.54	0.47
Error	75994	75	1013		

This table shows descriptive statistics and analysis for the two relevance questions in experiment one. In our 2 × 2 experiment, we manipulate whether the financial instrument was an asset (i.e., investment in bond) or a liability (i.e., bond payable) and also whether the interest rate change caused an economic loss or gain. The first relevance question asks participants to choose either fair value or historical cost as more relevant to their current assessment of the company used in the experiment (Alpha Company). The second relevance question asks them to consider the difference between the current fair value and historical cost of the financial instrument and to rate the extent to which this amount makes a difference in their assessment of the current performance of Alpha.

cost as more relevant for the investment in bond (mean of 54.50) than the bond payable (mean of 35.91) ($F = 6.55$, p-value $= 0.01$). Once again, we see no effect for sign of the outcome or for its interaction with type of financial instrument (both p-values > 0.30).

Table 2 reports the results for question 3, whether the difference between fair value and historical cost makes the company worse off or better off. Because we predict a specific type of (ordinal) interaction for this question (i.e., larger difference between gains and losses for assets than for liabilities), the default (disordinal or cross-over pattern) interaction statistic that is provided by the traditional ANOVA is not a powerful test of our hypothesis. Although we report the default interaction statistic in Table 2, Panel B, we also estimate and rely on a planned interaction contrast that more appropriately tests our prediction (see Panel C). Specifically, we rely on weights of 2, −2, 1, and −1 for the asset/gain, asset/loss, liability/gain, and liability/loss conditions.[11] Results show that this planned interaction contrast is significant ($F = 6.02$, p-value $= 0.02$). Follow-up simple main effect tests reveal that the difference in mean response for the asset (loss = −0.50; gain = 15.63) is statistically significant ($F = 4.65$, p-value $= 0.03$), while the difference for the mean response for the liability (loss = −1.78; gain = 8.68) is not significant ($F = 1.38$, p-value $= 0.24$), again supporting the veracity of our interaction test.

Question 4 asks participants whether the fair value change affects the value of the company. Categorical ANOVA results are shown in Panels D through F of Table 2. There is a significant financial instrument × outcome interaction ($\chi^2 = 8.52$, p-value $= 0.01$) along with a main effect for sign of outcome ($\chi^2 = 8.21$, p-value $= 0.02$). No financial instrument effect is observed ($\chi^2 = 4.48$, p-value $= 0.11$). Follow-up contrasts indicate that participants' responses in the asset situations vary depending on whether the outcome is a gain or loss ($\chi^2 = 13.23$, p-value < 0.01), but do not vary in the liability situations ($\chi^2 = 2.17$, p-value $= 0.34$), for which the most common response is "neither."

Recall that participants who answer "increase" or "decrease" to this fourth question also indicate the magnitude of the increase or decrease. We create a new variable that captures the joint effect of "increase" or "decrease" and the magnitude (i.e., increase coded as a 1 and multiplied by strength response; decrease coded as −1 and multiplied by strength response; "neither" coded as 0). This measure (not tabulated) reveals a significant interaction between the two manipulated variables ($F = 11.15$, p-value < 0.01). That is, we see a larger difference in the mean judgments for the asset/gain (mean of 20.42) and asset/loss (mean of −13.41) conditions than the liability/gain (mean of 7.63) and the liability/loss (mean of −7.86) conditions. Simple main effect tests confirm that the asset difference is statistically significant ($F = 10.01$, p-value < 0.01) but the liability difference is not ($F = 1.47$, p-value $= 0.23$). Overall, the value results are as anticipated.

IV. EXPERIMENT TWO

Design and Participants

The second experiment tests the ideas in H2, H3, and H4. One hundred M.B.A. students, with an average of 5.0 years of work experience, participated. Seventy-two percent of participants had previously made investments in common stocks, and 97 percent either had invested or planned to invest in common stocks in the future. Participants had taken an average of 4.7 finance and 3.0 accounting classes.

The experiment involves a 2 × 2 × 2 mixed design. We focus on loss outcomes in this second experiment because experiment one indicated that gains and losses are not evaluated differently (in terms of relevance judgments). We vary, between-participants, the financial instrument—asset or liability—and also whether participants are provided with additional information that explains how

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[11] The significance of our interaction is robust to alternative weighting schemes that meet the requirement that the difference between the two asset conditions is larger than the difference between the two liability conditions.

TABLE 2

Experiment One
Results for Influence of Difference between Fair Value and Historical Cost on Company and Its Valuation

Panel A: Descriptive Statistics for Question 3: Mean Response (Standard Deviation) for Whether Difference between Fair Value and Historical Cost Makes Company Worse Off or Better Off

	Financial Instrument		
Outcome	**Asset**	**Liability**	**Row**
Loss	−0.50	−1.78	−1.00
	(31.32)	(19.38)	(26.99)
Gain	15.63	8.68	12.56
	(23.47)	(23.56)	(23.49)
Column	7.91	4.24	
	(28.38)	(22.19)	

Panel B: Traditional Analysis of Variance Statistics for Question 3

Source	Sums of Squares	df	Mean Square	F-statistic	Two-Tailed p-value
Financial Instrument	320	1	320	0.50	0.48
Outcome	3349	1	3349	5.22	0.03
Financial Instrument × Outcome	151	1	151	0.24	0.63
Error	52260	75	641		

Panel C: Planned Interaction Contrast and Follow-Up Tests for Question 3

Source	Mean Square	df	F-statistic	Two-Tailed p-value
Planned interaction contrast	3862	1	6.02	0.02
Simple main effect of:				
Loss/Gain for Financial Asset	2985	1	4.65	0.03
Loss/Gain for Financial Liability	884	1	1.38	0.24

Panel D: Descriptive Statistics (Percent Choosing Decrease, Increase, or Neither)

	Financial Instrument								
	Asset			Liability			Row		
Outcome	**Dec.**	**Inc.**	**Neither**	**Dec.**	**Inc.**	**Neither**	**Dec.**	**Inc.**	**Neither**
Loss	68%	18%	14%	29%	7%	64%	53%	14%	33%
Gain	8%	50%	42%	32%	26%	42%	19%	40%	41%
Column	37%	35%	28%	30%	18%	52%			

(continued on next page)

TABLE 2 (continued)

Panel E: Traditional Categorical Modeling Statistical Test for Question 4

Source	Chi-Square Statistic	df	Two-Tailed p-value
Financial Instrument	4.48	2	0.11
Outcome	8.21	2	0.02
Financial Instrument × Outcome	8.52	2	0.01

Panel F: Follow-Up Contrasts for Question 4

Source	Chi-Square Statistic	df	Two-Tailed p-value
Simple main effect of:			
Loss/Gain for Financial Asset	13.23	2	<0.01
Loss/Gain for Financial Liability	2.17	2	0.34

This table shows the descriptive statistics and analysis for the experiment one questions designed to determine whether the difference between the fair value and historical cost of the financial instrument provided to study participants influences the firm and its valuation. In our 2 × 2 experiment, we manipulate whether the financial instrument was an asset (i.e., investment in bond) or a liability (i.e., bond payable) and also whether the interest rate change causes an economic loss or gain. The third question asked participants whether the difference between fair value and historical cost caused the company to be worse off or better off. The response scale is: −50 "makes Alpha significantly worse off," 0 "makes Alpha neither worse off nor better off," and 50 "makes Alpha significantly better off." The fourth question asks participants whether the situation described in the case affects the value they would place on the firm (and told them to assume any value change is not already incorporated into the company's stock price). Three options are provided: Increases the value placed on Alpha, decreases the value placed on Alpha, and neither increases or decreases the value placed on Alpha.

the fair value loss represents a forgone opportunity. The financial instruments are the same as those in experiment one. On a within-participants basis, we also vary the intent of the company holding the instrument—that is, it is either intended to be held to maturity or settled soon. We randomly assign participants to the between-participant conditions.

Materials, Manipulations, and Questions

Participants are asked to serve in the role of a potential investor evaluating two otherwise identical companies—Companies A and B. Depending on the financial instrument condition to which they are assigned, the two companies either had fixed-rate bonds payable (liability) or investments in bonds (asset). Similar to experiment one, participants are then told that interest rates changed in year 3. All participants are informed that Company A intends to hold to maturity the financial instrument (i.e., roughly 12 more years), while Company B intends to settle/sell the financial instrument soon. The materials provide participants with the historical cost and fair value of the financial instrument.

After receiving this information, participants in the *additional-information* conditions are then given information explaining how the fair value change represents a forgone opportunity. This information, shown in Exhibit 2, explains the relationship between the fair value loss and the forgone opportunity. Those participants in the *no-additional-information* condition do not receive this information.

Participants answer three questions that are tailored after those in the first experiment. For each question, they respond first for Company A (i.e., the company holding the instrument to maturity)

EXHIBIT 2

Experiment Two
Additional Information about Forgone Opportunities

Before you make your assessments of Company A and Company B, you run into a well-respected colleague Bob. You tell Bob about your evaluation of the two companies. Bob tells you that he just wrote up some notes on fair value issues and gives them to you to look at.

Investments in Fixed-Rate Bonds

Interest rate increase: Here, the fair value of the bond investment decreases. Because of the fixed interest rate, the investor will earn less cash interest because they bought the investment at a time when rates were lower. The investor's cash account will be lower over time as they have a lower paying investment.

Even if the investor were to try to sell the investment and get into the current higher-rate investments, it's too late. They'd have to sell the investment at a loss, so the outflow for the purchase would be bigger than the inflow from the sale.

In short, whether or not the investor keeps the investment, their cash balance will be lower—either immediately (sale) or over time (holding on to it)—compared to what it would have been if the bonds did not lock in the interest rate. From a present value perspective, there's no difference between selling the investment immediately and holding on to it—the company became worse off when the rates changed.

Fixed-Rate Bonds Payable

Interest rate decrease: Here, the fair value of the bonds payable increases. Because of the fixed interest rate, the company will pay more cash interest because they issued the bonds payable at a time when rates were higher. Thus, the company's cash account will be lower over time as they have higher paying debt.

Even if the company were to try to buy back (i.e., settle) the bonds payable and issue new debt at the current lower rates, it's too late. They'd have to settle the debt at a loss, so the outflow for buying back the bonds payable would be bigger than the inflow from issuing new debt.

In short, whether or not the company keeps the bonds payable, their cash balance will be lower—either immediately (settle) or over time (holding on to them)—compared to what it would have been if the bonds did not lock in the interest rate. From a present value perspective, there's no difference between buying back the bonds immediately and holding on to them—the company became worse off when the rates changed.

and then for Company B (i.e., the company that plans to sell/settle soon the instrument). The first question pertains to perceived relevance of the fair value of the financial instrument to their evaluation of the current position of the firm. Participants respond on a 101-point continuous scale, with 0 (100) representing "not at all relevant" ("highly relevant"). Using a similar response scale, question two asks participants to judge the relevance of the difference between current fair value and the historical cost. The third question asks participants to judge how the situation affects the value they would place on the company, assuming that any potential value change is not already incorporated into the company's stock price. Because all participants were exposed to loss outcomes from the interest rate changes, the response scale is anchored at 0 (100), labeled "does not change how much I value the firm" ("greatly decreases how much I value the firm").

Experiment Two Results

We conduct a 2 × 2 × 2 mixed-model analysis of variance for each of the three dependent measures. For each measure, the results show no significant effect for the additional information and no significant interaction of this variable with either of the two other independent variables (results not tabulated). Accordingly, we do not find support for the H4 prediction that providing information about the fair value and forgone opportunities influences how investors judge fair value relevance.

Because of this result, we collapse over this variable and present 2 × 2 mixed-model results. Based on the logic of H2 and H3, we anticipate that investors will judge the relevance of fair value as greater when the financial instrument is to be sold/settled soon than when it is to be held to maturity, and that this main effect will be moderated by the type of financial instrument (interaction effect). Specifically, we anticipate that investors will make a larger distinction in their relevance judgments between financial assets (versus financial liabilities) that are to be sold/settled soon versus held to maturity.[12]

Over our three measures, we consistently observe a management intent main effect as well as an instrument-by-intent interaction (all p-values < 0.06). For brevity, we present only the first and third questions, which correspond to relevance and value questions, respectively. Panels A and C of Table 3 show the means and standard deviations by condition, while Panels B and D present the results of the statistical analysis.

Turning to our first test—namely, a main effect of management intent (H3)—we find that investors judge the relevance of fair value to be higher when the company intends to sell/settle its financial instrument soon (mean of 68.20) than when it intends to hold it to maturity (mean of 49.36) ($F = 33.79$, p-value < 0.01). This result supports H3. The value results follow from these relevance results, as the decrease in value of the firm is greater in the sell/settle-soon condition (mean of 48.48) than in the hold-to-maturity condition (mean of 35.51) ($F = 18.95$, p-value $<$ 0.01). These results indicate that the difference between fair value and historical cost is judged more relevant when the item is to be sold/settled soon, and the decrease in value of the company is greater when the company intends to soon sell/settle the item with the fair value loss.

This main effect result must be viewed in light of our predicted interaction of the management intent and instrument variables. The results in Panel B of Table 3 support an interaction between intent and instrument, as we expect ($F = 3.59$, p-value $= 0.06$). However, follow-up simple main effects show that some, but not all, of the interaction pattern is as anticipated. We observe a larger separation in the means for the two asset conditions than the two liability conditions, as expected. Specifically, participants in the sell-soon asset condition judge fair value relevance as greater (mean of 73.44) than those in the held-to-maturity asset condition (mean of 48.36) ($t = 5.42$, p-value $<$ 0.01). Those in the settle-soon liability condition also judge the relevance of fair value greater (mean of 63.10) than those in the hold-to-maturity liability condition (mean of 50.35) ($t = 2.79$, p-value < 0.01). Thus, for both assets and liabilities, participants are affected by the timing of realization in their relevance judgments, with the asset difference larger than the liability difference.

Further inspection of the interaction, however, suggests that these differences are caused by unexpected relationships. Namely, we find that the two sell-soon conditions are significantly different (asset mean of 73.44 and liability mean of 63.10) ($t = 1.77$, p-value $= 0.08$), but the two hold-to-maturity conditions are not statistically different (asset mean of 48.36 and liability mean of 50.35) ($t = 0.34$, p-value $= 0.73$). These results are not consistent with our expectations.

Turning to the question about changes in firm value, we also observe a significant interaction between intent and instrument, as expected ($F = 16.37$, p-value $= 0.01$). Follow-up tests again show a larger separation in the means for the two asset conditions than the two liability conditions, as anticipated. Those in the sell-soon asset condition judge the amount by which the fair value

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[12] To our knowledge, it is not possible to conduct a planned-interaction contrast (as we did in experiment one) in a mixed (i.e., between-within) design. Accordingly, we rely on the standard interaction statistic as well as follow-up simple main effect tests.

TABLE 3

Experiment Two Results

Panel A: Descriptive Statistics for Question 1: Mean Response (Standard Deviation) for Relevance of Fair Value

	Financial Instrument		
Company Intent	**Asset**	**Liability**	**Row**
Hold to Maturity	48.36	50.35	49.36
	(25.48)	(28.40)	(26.84)
Sell Soon	73.44	63.10	68.20
	(22.65)	(26.89)	(25.27)
Column	60.90	56.73	
	(27.07)	(28.22)	

Panel B: Analysis of Variance Statistics for Question 1

Source	df	F-statistic	Two-Tailed p-value
Financial Instrument	1	0.74	0.39
Intent	1	33.79	<0.01
Financial Instrument × Intent	1	3.59	0.06
Error	77		

Panel C: Descriptive Statistics for Question 3: Mean Response (Standard Deviation) for Value Question

	Financial Instrument		
Company Intent	**Asset**	**Liability**	**Row**
Hold to Maturity	30.18	40.70	35.51
	(18.92)	(23.88)	(22.08)
Sell Soon	55.13	41.63	48.48
	(24.91)	(26.00)	(26.25)
Column	42.85	41.16	
	(25.41)	(24.81)	

Panel D: Analysis of Variance Statistics for Question 3

Source	df	F-statistic	Two-Tailed p-value
Financial Instrument	1	0.15	0.70
Intent	1	18.95	<0.01
Financial Instrument × Intent	1	16.37	0.01
Error	77		

This table shows the descriptive statistics and analysis for the relevance and value questions in experiment two. In our 2 × 2 × 2 experiment, we manipulate whether the financial instrument was an asset (i.e., investment in bond) or a liability (i.e., bond payable), whether management intended to hold the instrument to maturity or settle it soon, and whether participants were provided with additional information about forgone opportunities and fair value. Because this variable showed insignificant results, we collapsed over it for purposes of this table. The relevance question asked participants to judge the relevance of the fair value of the financial instrument to their current evaluation of the firm. The 101-point response scale was anchored at 0 (100) with "not at all relevant" ("highly relevant"). The value question asked participants to judge how the situation affects the value they would place on the firm, assuming that any potential value change is not already incorporated into the company's stock price. Because all participants were exposed to loss outcomes from the interest rate changes, the response scale was anchored at 0 (100) with labels "does not change how much I value the firm" ("greatly decreases how much I value the firm").

change situation decreases the value of the firm as greater (mean of 55.13) than those in the held-to-maturity asset condition (mean of 30.18) ($t = 25.33$, $p\text{-value} < 0.01$). Those in the settle-soon liability condition judge the amount by which the fair value change situation decreases the value of the firm as about the same (mean of 40.70) as those in the hold-to-maturity liability condition (mean of 41.63) ($t = 0.22$, $p\text{-value} = 0.83$).

Further inspection of the interaction once again suggests that these differences are being caused by unexpected relationships. Namely, we find that the mean judged value decrease for assets in the sell-soon condition as significantly higher (mean of 55.13) than for liabilities (mean of 41.63) ($t = 2.61$, $p\text{-value} = 0.01$). We also observe a statistically significant difference in the means for the instrument variable in the hold-to-maturity condition ($t = 1.98$, $p\text{-value} = 0.05$). There, the judged decrease in firm valuation is smaller in the asset condition (mean of 30.18) than the liability condition (mean of 40.70).

V. EXPERIMENT THREE

Design and Participants

Because the additional information about fair value and forgone opportunities did not have the intended effect in our second experiment, we conduct a third experiment that strengthens the manipulation. Specifically, we made the manipulation stronger by also indicating how different actions on the part of firm management would have avoided the fair value loss. Indeed, we explicitly provide the counterfactual logic. This manipulation is shown in Exhibit 3.

The design for the third experiment is a 2 × 2 between-participants design. We vary whether the financial liability (i.e., the same fixed-rate instrument used in experiments one and two) is to be held to maturity or settled soon. We also vary whether participants are provided with the additional information—that is, information that explains fair values and forgone opportunities. One hundred students participated; they were from the same M.B.A. program as used in experiment two, with no overlap in the two sets of participants.

Materials, Manipulations, and Questions

Similar to the protocol in the first two studies, participants serve in the role of a potential investor evaluating a firm. They are informed that the company has fixed-interest-rate bonds payable that are issued at par in year 1 with maturity in year 15. We study only financial liabilities (versus financial assets) in experiment three, as it should maximize the possibility that the additional information about forgone opportunities can work.

Participants are then told that interest rates decreased in year 3, but that the interest cash flow payment would remain the same. In addition, participants are told the fair value amount that the company would have to pay to reacquire the bonds in the open market, should management choose to settle the bonds in year 3. All of this information is common to all conditions. After this information is presented, those in the two *held-to-maturity* conditions are told that Alpha Company intends to hold the bonds payable to their regularly scheduled maturity in year 15 and pay off the bonds at that time at the face value of the bonds. Those in the two *settle-soon* conditions are informed that Alpha Company intends to settle, or pay off, the bonds payable prior to maturity and then issue new bonds payable, at the current market rate of interest.

After receiving this information, participants in the two *additional-information* conditions are then given the alternative set of actions that Alpha Company did not take—namely, extinguish debt before rates change and then refinance at the current, lower rate of interest—which led to the forgone opportunity (i.e., fair value loss). After being presented with this counterfactual information, participants answer a series of questions. Our primary measure is the first question,

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EXHIBIT 3

Experiment Three
Stimuli[a]

Consider the following information about Alpha Company. Alpha uses bonds to help finance their operations and long-term capital expenditures. Alpha is in the printing and publishing industry. Assume that all dollar amounts are highly significant/material.

Alpha Company

- In Year 1, the company issues 7% Bonds Payable outstanding with a maturity amount of $10 million (i.e., $10,000,000). These bonds were issued at par at $10 million. Thus, their original issue dollar amount is what will be repaid at maturity. These bonds mature in Year 15.
- These Bonds Payable are fixed-interest-rate bonds.
- In December of Year 3, interest rates decreased to 5%.
- The impact of this interest rate change on Alpha is as follows:
    - Because Alpha has fixed-interest-rate bonds, their annual interest cash flow payments will remain the same at $700,000.
    - If Alpha were to settle these bonds payable now, they would have to reacquire them in the open market (i.e., settle them) at their current fair value, which is $11,772,000. This current fair value is greater than the maturity amount of the bonds.
- You learn that Alpha intends to hold the existing bonds payable to their regularly scheduled maturity in Year 15. That is, they will not reacquire them in the market (i.e., settle them) prior to their maturity which is in Year 15. At that time, they will settle the bonds payable (i.e., pay off) at their maturity amount of $10,000,000.

You now run into an old friend who works in the industry. You show to this friend the information about Alpha. This friend indicates to you that one way to evaluate Alpha's situation is to think about an alternative set of actions that Alpha could have taken, as shown below. The differences in actions and consequences from what Alpha actually did as compared to what they could have done are bolded below.

Another Set of Actions that Could Have Been Taken by Alpha

- In Year 1, the Company issues 7% fixed-rate Bonds Payable outstanding with a maturity amount of $10 million (i.e., $10,000,000). These bonds were issued at par at $10 million. Thus, their original issue dollar amount is what will be repaid at maturity. **These bonds mature in Year 3.**
- **In December, Year 3, the Company settles (i.e., pays off) these bonds on schedule at their maturity amount of $10 million.**
- Later, in December of Year 3, interest rates *decreased to 5%.*
- **Shortly after the interest rate change, the Company issues new bonds payable in the amount of $10 million with a fixed interest-rate of 5%. These new bonds mature in twelve years (i.e., in Year 15).**
- The impact of this is:
    - Because the Company has fixed-interest-rate bonds, their future interest cash flow payments will remain the same at **$500,000 per year.**
    - If the Company were to settle these bonds payable now, they would have to reacquire them in the open market (i.e., settle them) at their current fair value, which is **$10,000,000**. This current fair value **is equal to** the maturity amount of the bonds.

Your friend indicates that because Alpha did *not* undertake these actions, they were contractually bound to pay $200,000 extra in interest per year for the next 12 years. The present value of this $200,000 extra interest is the amount by which the fair value of the bonds exceeds the maturity value or $1,772,000. Your friend also points out that in the future Alpha's cash balance will be lower because they did *not* undertake these actions listed above.

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EXHIBIT 3 (continued)

[a] The exhibit shows the Held-to-Maturity With Additional Information condition. The Settle-Soon condition differs only in the bullet point pertaining to Alpha's intent. In that condition, it reads:
You learn that Alpha intends to *settle (i.e. pay off) the existing bonds payable prior to their maturity and then issue new bonds payable*. That is, in the next several days Alpha intends to settle the existing bonds in the market by buying them back from the bondholders at the current fair value (i.e. $11,772,000). They then intend to issue new bonds at the current market rate of interest (i.e. 5%) with a maturity in 12 years (i.e. Year 15).

a forced-choice question that asks whether historical cost or fair value is more relevant to the current assessment of the financial position of Alpha. We also ask questions that are very similar to questions two and four from experiment one.

Experiment Three Results

Based on the logic of H3 and H4, we anticipate that the presence or absence of the additional information about forgone opportunities will have a greater effect on investors' relevance judgments when the financial liability is to be held to maturity as compared to settled soon. Table 4 shows the results for the relevance question.[13] As expected, without the additional information, those who are told the company is holding the bonds to maturity judge fair value to be the least relevant. Stated differently, the percentage of participants choosing fair value as the most relevant measurement is lower in the *held-to-maturity/no-additional-information* condition (similar to experiment one) than in the *held-to-maturity/additional-information* condition (60.0 percent versus 84.0%) ($\chi^2 = 3.38$, p-value = 0.07). The percentage of participants choosing fair value as most relevant does not differ in the two settle-soon conditions (both were 76.0 percent) ($\chi^2 = 0.00$, p-value = 1.00). A planned interaction contrast for this predicted pattern of results (i.e., 1, 1, 1, −3), following the traditional procedures when the data are proportions (Agresti 2002), is significant at 0.07 ($\chi^2 = 3.38$).[14] These results are consistent with our expectations. The value question surprisingly did not show results consistent with this interaction.

Although these results indicate that the stronger manipulation regarding forgone opportunities information (i.e., including the counterfactual) did work, it appears to have not influenced participants' valuation judgments. An additional question asked in this third experiment helps to explain why. All participants are asked about how fair it was to evaluate the company in light of a hypothetical set of transactions where the company refinanced before rates changed. Those in the additional-information conditions should recognize that the hypothetical set of transactions being referred to in this question as those previously received in the experiment (with much detail and quantitative analysis). Perhaps not surprisingly (particularly in hindsight), the participants in the additional-information conditions indicated that it was significantly more unfair to compare the actual Alpha Company's actions to the hypothetical set of actions they could have taken (F = 3.08, p-value = 0.08). That is, the participants in the additional-information conditions previously saw the specifics of the hypothetical set of actions, and likely thought through them more extensively than those in the other conditions. Thus, the additional-information participants could have

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[13] To check that all participants understood the management intent variable, we asked participants at the end of the instrument about management's intent regarding the debt. Ninety-four percent of participants in the *hold-to-maturity* conditions responded correctly to this question, and 74 percent responded appropriately in the *settle* conditions. These percentages are significantly associated with the experimental conditions ($\chi^2 = 29.84$, p-value < 0.01), suggesting the effectiveness of our manipulation.

[14] The significance of this interaction is robust to alternative contrast codes that meet the requirement that the difference in the two settle-soon conditions is smaller than the difference in the two held-to-maturity conditions.

TABLE 4

Experiment Three
Percentage of Participants Choosing Fair Value as the Most Relevant Measurement

Panel A: Descriptive Statistics (Percent Choosing Fair Value)

	Management Intent		
Additional Information	**Hold to Maturity**	**Settle Soon**	**Row**
No Additional Information	60% (15/25)	76% (19/25)	68% (34/50)
Additional Information	84% (21/25)	76% (19/25)	80% (40/50)
Column	72% (33/50)	76% (38/50)	

Panel B: Traditional Categorical Modeling Statistical Test

Source	Chi-Square Statistic	df	Two-Tailed p-value
Intent	0.06	1	0.80
Additional Information	1.74	1	0.19
Intent × Additional Information	1.74	1	0.19

Panel C: Planned Interaction Contract and Follow-Up Tests

Source	Chi-Square Statistic	df	Two-Tailed p-value
Planned Interaction Contrast	3.38	1	0.07
Simple Main Effect of:			
Additional Information for Hold-to-Maturity Intent	3.38	1	0.07
Additional Information for Settle-Soon Intent	0.00	1	1.00

This table shows the descriptive statistics and analysis for the two relevance questions in experiment three. In our 2 × 2 experiment, we manipulate whether management of the Alpha Company that holds the financial liability (i.e., bond payable) is intending to hold it to maturity or settle it soon (i.e., buying it back in the open market) and whether participants are provided with additional counterfactual information designed to explain the link between forgone opportunities and fair value. The question summarized above asked participants to pick either fair value or historical cost as more relevant to their current assessment of Alpha Company.

considered the hypothetical actions (i.e., refinancing before rates changed) as less likely to have actually occurred and, as a result, more unfair. Thus, one possible explanation for the lack of significant results on some of the questions is that the additional information was viewed as presenting an unfair scenario and, accordingly, should not be incorporated into the valuation of the company.

In summary, the results for experiment three, while supporting the idea that information about forgone opportunities can alter relevance judgments, also indicate that investors do not like to blame companies (i.e., reduce their valuations) for decisions made previously that were done with reasonable care. This result is consistent with prior research (Koonce et al. 2008) in the financial derivatives domain, which finds that investors do not punish firms for bad (in hindsight) derivative outcomes that were initially made in good faith. It also is consistent with some psychology research noting that, if it is difficult to envision an alternative outcome after the actual outcome becomes known, individuals will not entertain such alternatives when evaluating the decision maker (Sanna et al. 2002).

VI. ADDITIONAL TESTS

We conduct several additional experiments to rule out possible alternative explanations for our results. First, one alternative explanation is that our experiment one participants judged fair value less relevant for liabilities than for assets because of a liquidity argument. That is, cash must be paid out to settle liabilities, whereas cash is received to settle assets. To address this issue, a separate group of 50 M.B.A.s were asked questions about six items—three of which are assets and three of which are liabilities. Key to our purposes, however, is that one asset is the same as used in experiment one (investment in bond) and one liability is the same as in experiment one (bond payable). Two questions pertain to the ease of acquiring or disposing of an item. Two other questions address the likelihood of acquiring or disposing of an item.

Results rule out a liquidity argument in two ways. First, participants judge it easier to acquire the investment in bond asset (mean of 75.08) than the bond payable liability (mean of 63.64) ($F = 12.43$, p-value < 0.01). If liquidity concerns are driving their relevance judgments, then participants should make the opposite judgment—namely, assess it as easier to acquire a bond payable (i.e., cash inflow) than an investment in bond (i.e., cash outflow). Second, our results show that participants render it no more or less likely that the firm would dispose of the bond investment early (mean likelihood of 48.66) as compared to the bond liability (mean likelihood of 50.86) ($F = 0.24$, p-value $= 0.63$). Further, participants conclude that it is no more or less likely that the firm would acquire a bond payable (mean likelihood of 58.72) than a bond investment (mean likelihood of 63.50) ($F = 1.47$, p-value $= 0.23$). A liquidity interpretation of our results would suggest that firms would be more likely to dispose of (acquire) the bond investment earlier (later) than a bond liability. Overall, our results are not consistent with a liquidity interpretation.

Another possible explanation for our results is that our study participants surmised that the financial liability contained a restriction that did not allow the company to transfer it to others. If so, this supposition could explain why their relevance judgments are lower for liabilities in experiment one. Although our case indicated that the debt was publicly traded and no mention was made of any restrictions on the debt, it is nevertheless possible that our participants *inferred* this when responding to the case. To rule out this possibility, we asked a separate group of 20 M.B.A.s to evaluate two otherwise identical companies, both of which had bonds payable that had increased in value due an interest rate change. One company's bonds were restricted, while the other company's bonds were not. Participants were asked questions identical to those in experiment two. Results indicate that judgments about fair value relevance, the relevance of the difference between fair value and historical cost, and the change in firm value because of the fair value change are not statistically different between the two conditions (all p-values > 0.20). Thus, these results rule out that participants were judging the fair value of liabilities as lower because of restriction concerns.

VII. CONCLUSIONS

We conduct multiple experiments to investigate whether and how investors' judgments of fair value relevance are sensitive to three contexts: whether fair values lead to losses versus gains; whether fair values are applied to assets versus liabilities; and whether management intends to sell/settle soon versus hold to maturity. We draw on the ideas in counterfactual reasoning theory (Roese 1997), which maintains that these three contexts capture the following underlying constructs—namely, the desirability of the outcome, the mutability of the item, and the perceived closeness of the outcome, respectively—that are likely to influence whether investors will consider forgone opportunities and, thus, their fair value relevance judgments.

Results show that investors consider fair value as more relevant for assets than for liabilities, even when the underlying economics of the financial instrument are held constant. These differential fair value relevance judgments translate into differences in judgments about firm value. Investors also judge fair value as more relevant when the company anticipates selling or settling the financial instrument in the near-term, as compared to holding the item to maturity. Attempting to influence investors' relevance judgments by providing them with additional information about forgone opportunities has an effect only when that information includes counterfactual statements.

Our study should be informative for investors and standard-setters. We show that investors appear more comfortable with the relevance of fair value for assets than for liabilities and for items to be sold soon than held to maturity. This finding could be of concern to standard-setters, as firms may gravitate, for example, to recognizing fair values primarily for financial assets under the fair value option in SFAS No. 159 (FASB 2007b). Such reporting decisions may further exacerbate investor reluctance to embrace fair values for liabilities or for items not to be sold soon.

Although we believe our study has important implications, it also potentially has limitations that provide opportunities for additional research. For example, while we rely on counterfactual reasoning theory to develop predictions, we did not ask participants to provide counterfactual thoughts as part of the experimental task. In addition, we study only one financial instrument—either from the asset side (investment in bonds) or liability side (bond payable). While this item confers several advantages from a research design standpoint, it may limit the extent to which we can generalize our results. For example, do our findings hold for nonfinancial instruments, like tangible assets and performance obligation liabilities?

Another potential limitation is that the additional information provided to study participants about forgone opportunities in experiments two and three was designed to increase their judgments about fair value relevance. An alternative approach, consistent with the viewpoints of fair value *opponents*, would be to design such information to have the opposite effect on relevance judgments (i.e., decrease them). Such a study would add to our understanding of how judgments about fair value can be influenced by additional disclosures. More broadly, research could identify those conditions for which individuals are comfortable measuring and recognizing information about forgone alternatives. In our study, the forgone opportunity related directly to a measurement attribute of an existing asset or liability. However, other forgone opportunities exist in financial reporting but we do not measure nor recognize them. For example, an almost-landed sales contract is not recorded under current standards. It would be interesting to determine how investors think about forgone opportunities more generally.

Finally, our study suggests that counterfactual reasoning theory is a logical way to capture the ideas espoused by fair value proponents. That is, thinking about fair value gains and losses, which are forgone opportunities, is consistent with counterfactual reasoning, whereby individuals "undo" outcomes by changing (or mutating) the cause that led to them. Although our results are largely consistent with counterfactual reasoning theory, several unexpected findings emerged—for example, we observe no difference in fair value relevance judgments between gains and losses. Accordingly, future research should further explore the question of whether counterfactual reasoning theory provides a complete theoretical account of individuals' fair value assessments.

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Legal Expertise on Corporate Audit Committees and Financial Reporting Quality

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ABSTRACT: Recent trends in corporate board composition indicate an increase in the appointment of directors with legal expertise. Using two financial reporting quality measures, accruals quality and discretionary accruals, we find—for a sample of Russell 1000 firms in 2003 and 2005—that the presence (and proportion) of directors with legal backgrounds on the audit committee is associated with higher financial reporting quality. These results obtain after controlling for *accounting expertise* on audit committees. Also, supplementary tests indicate a positive association between changes in legal expertise and changes in financial reporting quality, suggesting that legal expertise serves as a monitor rather than as a signal of financial reporting quality. Further, the two forms of expertise interact—i.e., the presence of directors with *both* forms of expertise enhances financial reporting quality, beyond the contribution of the individual forms of expertise. Additional tests suggest that the positive effects of legal expertise are greater in the post-SOX period compared with a pre-SOX year.

Keywords: *audit committee; legal expertise; financial expertise; financial reporting quality.*

I. INTRODUCTION

Accounting scandals surrounding the collapse of Enron Corporation and other high-profile companies have focused attention on the monitoring role of the audit committees of corporate boards in ensuring the quality of corporate financial reporting (e.g., Ruder 2002). A number of studies have examined whether audit committee (and board) characteristics,

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such as size, independence, and activity, are associated with measures of financial reporting quality (e.g., Beasley 1996; Carcello et al. 2010). Further, new policies introduced by stock exchanges and by the Sarbanes-Oxley Act of 2002 (SOX, U.S. Congress 2002) have prompted significant *changes* in board structures, activities, and composition (Linck et al. 2009), potentially leading to changes in the monitoring of financial reporting. For example, changes in rules concerning the appointment of "financial experts" to corporate audit committees have stimulated research on the association between audit committee financial expertise and the quality of financial reporting (e.g., Bédard et al. 2004).

We examine the association between *legal expertise* on audit committees, a hitherto unexplored facet of changing board composition, and financial reporting quality. Our investigation is particularly relevant because the number of lawyers appointed to corporate boards has increased in recent years. Linck et al. (2009) report that, in the wake of the Sarbanes-Oxley Act, the share of board seats held by lawyers increased from 5.6 percent in 2001 to 8.6 percent in 2004. Companies have added proportionately more lawyers to their boards than any other category of new appointees, including financial experts. We focus on the audit committee because it has the specific charge of overseeing financial reporting. In our sample of Russell 1000 firms, 36 percent and 37 percent of audit committees in 2003 and 2005, respectively, have at least one director with a legal background.[1] Do audit committee directors with legal backgrounds bring benefits to the quality of financial reporting? One can reasonably expect that a legal background makes an audit committee member more vigilant about legal risks that are associated with inadequate, inaccurate, or aggressive financial reporting. Thus, audit committee members with legal expertise could help to ensure good-quality financial reporting because (1) financial reporting quality can be associated with legal liability threats and (2) their legal backgrounds make them alert to legal liability threats.

The quality of a firm's financial reporting can be associated with litigation risk. Section 11 of the Securities Act of 1933 and Rule 10b-5 of the Securities Exchange Act of 1934 impose civil liability for making "an untrue statement of a material fact" or omitting "to state a material fact necessary in order to make the statements made not misleading" (Kellogg 1984, 186). There are several examples of egregious financial misreporting (Enron and WorldCom being recent visible cases) that led to lawsuits and SEC action. However, faulty financial reporting can trigger lawsuits in less extreme situations as well. A 2009 survey of U.S. federal securities class action lawsuit filings shows that, for the period 1997–2007, over 50 percent of the filings were accounting-related cases for every single year (PricewaterhouseCoopers 2009). Financial restatements that are the result of low-quality financial reporting have also been shown to be associated with litigation (Jones and Weingram 1997; Palmrose and Scholz 2004).

The role of corporate lawyers—not lawyer-directors—in financial failures has drawn the attention of policymakers in the post-Enron era. The SEC has indicated that it will actively pursue lawyers (and other advisers) in cases of financial fraud (Johnson 2004). Section 307 of SOX emphasizes "minimum standards of professional conduct" for corporate lawyers, requiring them to report "evidence of a material violation of securities law or breach of fiduciary duty or similar violation" to the CEO and Chief Counsel, and if the latter do not take action, to the audit committee, or the board.

The rules do not address the role of *lawyer-directors,* but it seems likely that a director with a legal background will play an important role when wrongdoings occur.[2] First, a director with a legal background tends to be more alert to litigation risks and is more likely to feel the urgency to correct wrongdoings before they cause any real legal problems. Second, a director with a legal background shares the same professional background as the corporate lawyer. S/he is likely better able to communicate and cooperate with the corporate lawyer in addressing the problem.[3] Third, there are many accounting transactions that have legal implications (e.g., mergers and acquisitions, asset sales, special purpose entities) and audit committee legal experts can provide direct hands-on *monitoring* of these transactions, even though they do not provide *formal* legal advice. Schwarcz (2006, 1101) describes the increasing overlap in the "roles of lawyers and accountants in disclosing financial information," concluding that "there is a strong public perception . . . that lawyers should have some responsibility for preventing financial information failure."

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[1] As we explain later, a small proportion of these had accounting financial expertise as well.

[2] Clearly, liability risk can arise from sources other than financial reporting, and lawyer-directors would be alert to all forms of liability risk. We focus here on the risk arising from financial reporting matters.

We examine the association between audit committee legal expertise and financial reporting quality using accruals quality (Dechow and Dichev 2002) and discretionary accruals (Jones 1991), to proxy for financial reporting quality. We conduct our primary analyses for a period in the post-SOX era. Although our main focus is on legal expertise, recent policy discussions and academic research have emphasized the role of audit committee financial expertise—and in particular, *accounting* financial expertise—in ensuring financial reporting quality. About 65 percent and 75 percent of audit committees in our 2003 and 2005 samples, respectively, have at least one accounting expert while, as was mentioned earlier, 36 percent and 37 percent, respectively, have at least one legal expert. A relatively small proportion of the audit committees, 6 percent and 8 percent in 2003 and 2005, respectively, have "joint" experts with both legal and accounting expertise. Further, while accounting and joint experts serve mainly on the audit committee, legal experts are just as likely to serve outside the audit committee as on the audit committee.

In order to separate the effects of legal and accounting expertise, we construct measures of "legal-only" expertise, "accounting-only" expertise, and "joint" legal-accounting expertise. Our findings are as follows. First, audit committee legal expertise—measured as the existence of legal-only experts, and the number (or proportion) of legal-only experts on the audit committee—is positively associated with financial reporting quality, measured by accruals quality and discretionary accruals, after controlling for other audit committee and board characteristics. Other things equal, the addition of a legal-only expert is associated with a 36 percent (17 percent) decrease in accruals quality (absolute discretionary accruals). However, there is no association between the degree of legal expertise *outside* audit committees and financial reporting quality. Thus, directors' legal expertise is beneficial for financial reporting quality *only* when the experts are appointed to the audit committee. Consistent with findings in previous studies, we also find a positive association between accounting-only expertise on audit committees and financial reporting quality, but legal-only expertise adds to audit committee effectiveness after controlling for the contribution of accounting expertise. Interestingly, the magnitude of the positive effect on financial reporting quality is larger for legal-only expertise than for accounting-only expertise. Although this seems to be counterintuitive (because accountants have the specific training relating to financial reporting, and lawyers do not), there are several explanations for why the lawyer-directors can add more to financial reporting quality, at the margin, than accountant-directors. Accounting-only experts are present in a much larger segment of our sample firms compared to legal-only experts, and many firms (23.5 percent) have more than one accounting-only expert, whereas very few (4.7 percent) have multiple legal experts. Also, legal experts are voluntarily appointed by the firms to audit committees possibly because of some (unobservable) benefits they bring to financial reporting.

Second, we find no evidence that joint experts contribute more to financial reporting quality than the "pure" legal and accounting experts, but this could be due to low statistical power for our tests, arising from the low incidence of joint experts in the sample. However, we also consider whether the presence of different legal-only and accounting-only experts on the same audit committee contributes positively to financial reporting quality, beyond the contributions of the individual forms of expertise. Here we find a significant incremental effect on both measures of financial reporting quality, suggesting that the two forms of expertise complement each other in engendering good-quality reporting.

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[3] Companies also hire corporate counsel (and sometimes have in-house counsel) to ensure compliance with laws. However, unlike the lawyer-directors, these lawyers are employees of the corporation. We expect, therefore, that the legal expert on the audit committee will provide stronger monitoring than that provided by corporate counsel.

Third, we conduct a change analysis to assess an alternative "signaling" explanation (Engel 2005; Carcello et al. 2010) for our results—i.e., that legal experts prefer to work at companies with good-quality financial reporting—and the companies accordingly use the experts to signal the quality of their reporting. We find that increases in legal expertise between 2003 and 2005 are associated with improvement in financial reporting quality, as measured by a decline in discretionary accruals. This suggests that legal expertise plays a monitoring rather than a signaling role in financial reporting.

Finally, as supplementary analysis, we replicate some of the above analyses for a pre-SOX year (2001), and compare findings to our post-SOX sample. Interestingly, while legal expertise contributes positively to financial reporting quality in the pre-SOX year as well, it has an incrementally greater contribution in the post-SOX years. We speculate that the heightened investor awareness and regulatory scrutiny surrounding financial reporting in the post-SOX era likely engendered a greater monitoring effort on the part of the legal experts.

Our study makes the following contributions. First, we extend the investigation of audit committees' role in monitoring financial reporting to a dimension of directors' expertise that has not been investigated. Financial expertise has been emphasized by policymakers as a prescription for good financial reporting. We investigate a form of expertise that companies have *voluntarily* added to their boards and audit committees. Clearly, the composition of audit committee and board expertise is likely to be based on a cost-benefit analysis of the different types of expertise. Although the primary motivation of increasing legal expertise on boards may not be the enhancement of financial reporting,[4] one consequence of the appointment of legal experts to audit committees seems to be a positive effect on such reporting. Second, there has been considerable recent discussion on the role of corporate lawyers in preventing accounting fraud by actively communicating with the CEO and the board/audit committee about suspected wrongdoings. Our results suggest that legal experts on audit committees also helps, possibly by reinforcing efforts of corporate legal counsel, to reduce misrepresentation of financial performance.

We develop our hypothesis in the next section. Section III describes our empirical models, and Sections IV through VII present our analyses. Section VIII concludes.

II. HYPOTHESIS DEVELOPMENT

Financial Reporting Quality and Litigation Risk

Extant studies suggest that a firm's information environment has a significant impact on the level of risk faced by its investors. Easley and O'Hara (2004, 1554) conjecture that, lacking public information, uninformed investors face the risk of "holding too much of stocks with bad news and too little of stocks with good news" because informed investors are able to adjust their portfolio weights to incorporate new information. Further, information risk is not diversifiable because "uninformed investors are always on the wrong side."

The quality of a firm's financial reporting is an important contributor to the information environment. However, separation of ownership from control gives rise to agency conflicts between managers and shareholders (Jensen and Meckling 1976). As a result, information disclosure is controlled by the managers, who have incentives to disclose misleading information with the purpose, for example, of maximizing their compensation, increasing the value of their equity holdings (Cheng and Warfield 2005), lowering the cost of external financing (Dechow et al. 1996), or beating analysts' forecasts (Degeorge et al. 1999).

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[4] For example, entities that deal with environmental regulation rules and patents would benefit from director-lawyers on their boards. In the post-SOX era, the need for compliance with a greater number of disclosure requirements, and greater director liability (Linck et al. 2009), could have provided the impetus for expanding the number of lawyers on boards.

However, there is potential legal risk embedded in corporate financial reporting because of the civil liability for misleading information contained in the Securities Act and the SEC's Rule 10b-5 (Kellogg 1984). There is some evidence that the likelihood of lawsuits is positively associated with deficient financial reporting. DuCharme et al. (2004) find that earnings management around stock offers is positively associated with the incidence of subsequent litigation. Palmrose and Scholz (2004, 145) report that "core and pervasive restatements increase the likelihood and severity of lawsuits, incremental to other litigation factors including fraud, the impact of the restatement on net income, and stock prices." The PricewaterhouseCoopers (2000) survey shows that accounting issues related to revenue recognition are associated with securities class action lawsuits.

Financial Reporting Quality and Audit Committee Expertise

Although the board of directors is expected to serve as the overall monitor of management activities, it is the audit committee that is specifically charged with the oversight of financial reporting. Consequently, the audit committee is likely to be particularly concerned about the consequences of inadequate or inaccurate financial reporting, which include lawsuits and SEC action as noted above, and also director turnover (Farber 2005; Srinivasan 2005).

Several studies have examined the association between financial reporting quality and audit committee quality. Audit committee quality is measured in these studies by several characteristics, including size, independence, and expertise.[5] Particularly relevant to our study, these studies have documented that audit committee financial expertise is negatively associated with earnings management (e.g., Bédard et al. 2004; Carcello et al. 2010; Dhaliwal et al. 2010), accounting conservatism (Krishnan and Visvanathan 2008), and internal control problems (Krishnan 2005; Hoitash et al. 2009). Although the SEC's (2003) definition of financial expertise is broad, covering accounting, finance, and supervisory experiences, the research cited above finds consistently that it is specifically *accounting* financial expertise that yields monitoring benefits. The majority of studies using accruals-based measures (i.e., accruals quality or discretionary accruals) examine sample periods that precede SOX. However, one recent study, Carcello et al. (2010), using post-SOX data, note that the positive association between accounting financial expertise and financial reporting quality (discretionary accruals) holds only for firms with weak corporate governance systems, suggesting that, at least in the post-SOX era, audit committee accounting expertise substitutes for other corporate governance mechanisms.

Can Legal Experts on Audit Committees Help Enhance Financial Reporting Quality?

We extend this investigation to audit committees' legal expertise. The number of legal experts on corporate boards has increased in the wake of SOX (Linck et al. 2009). Because the audit committee has the specific charge of overseeing the firm's financial reporting, we focus on the role of legal expertise on audit committees, while also controlling for such expertise on the rest of the board. It is possible that firms hire directors with legal expertise to counter litigation risk and to deal with specific legal issues relating, for example, to patents and licenses, and not to directly improve financial reporting. However, because directors with legal expertise understand legal liability that can arise from poor-quality information (perhaps more so than other directors), we expect that their "natural attention and interest will be to attend to legal risk, giving more support to compliance and internal controls" (Langevoort 2007, 1841).

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[5] Many studies have noted associations between audit committee *independence* and financial reporting quality measures (e.g., Carcello and Neal 2000; Klein 2002; Vafeas 2005; Archambeault et al. 2008), particularly for sample periods prior to SOX. However, the Act mandated audit committee independence and, consequently, most companies now have close to completely independent audit committees. Because 95 percent of our audit committee directors are independent, we do not need to examine the impact of audit committee independence on financial reporting quality.

We posit that a legal expert on an *audit committee* would be particularly focused on liabilities arising from financial reporting both because of his/her trained sensitivity to litigation risk and because, as a member of the audit committee, he/she is charged with the oversight of financial reporting, particularly in recent years when that role has been emphasized by policymakers. Thus, while we expect all directors to be concerned about litigation risk, the legal expert is likely to be more sensitive to it, and the legal expert on the audit committee is particularly likely to be sensitive to litigation risk arising from financial reporting. The mechanisms through which the legal expert can help enhance reporting quality can be indirect, for example, through inquiry and questioning, or through ensuring the hiring of qualified and adequate management personnel. In some areas of accounting for which legal issues (and structured transactions) are particularly important, for example, mergers and acquisitions, asset sales, distribution to shareholders, loan agreements, disclosures of forward-looking information, and loss contingencies from litigation (Cunningham 2002), the legal expert on the audit committee is likely able to engage in more direct hands-on monitoring.

It is certainly true that firms frequently have in-house general counsels or hire outside legal counsel to help with complex accounting transactions with legal implications. However, the lawyer-director on an audit committee is independent of the firm and is likely to be a better monitor than the corporate lawyer who is an employee of the firm.[6] Thus, we hypothesize:

Hypothesis: Other things equal, audit committee legal expertise is positively related to financial reporting quality.

III. MODEL SPECIFICATION

We test our hypothesis using the following regression model:

$$\begin{aligned} AQ(\text{or } ADACC) = {} & \alpha_0 + \beta_1 ACLE + \beta_2 ACAFE + \beta_3 ACJOINT + \beta_4 LITRISK + \beta_5 ACTENURE \\ & + \beta_6 ACSIZE + \beta_7 NACLE + \beta_8 INDEP + \beta_9 GREY + \beta_{10} LEVERAGE \\ & + \beta_{11} INOWN + \beta_{12} SIZE + \beta_{13}\sigma(CFO) + \beta_{14}\sigma(SALES) \\ & + \beta_{15} OPERCYCLE + \beta_{16} NEGEARN + \beta_{17} YR05 + \zeta. \end{aligned} \tag{1}$$

The independent variables include expertise measures (*ACLE*, *ACAFE*, and *ACJOINT*), control variables, and an indicator variable for sample year 2005 (*YR05*).

Measures of Financial Reporting Quality

Following prior studies (e.g., Doyle et al. 2007; Ashbaugh-Skaife et al. 2008), we employ two proxies—accruals quality (*AQ*) and absolute discretionary accruals (*ADACC*)—for financial reporting quality. Our first proxy, *AQ*, captures the informativeness of earnings with respect to cash flows, using the Dechow and Dichev (2002) model as modified by Francis et al. (2005). We first regress current accruals (*TCA*) on operating cash flows in the current year (CFO_t), the preceding year (CFO_{t-1}), and the following year (CFO_{t+1}), changes in revenues (ΔREV), and gross property, plant, and equipment (*PPE*).[7]

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[6] About 92 percent of our sample firm-years with legal expertise have all *independent* lawyer directors.

$$TCA_{i,t} = \alpha_{0,t} + \beta_{1,i}CFO_{i,t-1} + \beta_{2,i}CFO_{i,t} + \beta_{3,i}CFO_{i,t+1} + \beta_{4,i}\Delta REV_{i,t} + \beta_{5,i}PPE_{i,t} + v_{i,t}. \tag{2}$$

All variables are scaled by total assets and winsorized at the 1 and 99 percent levels. We estimate Equation (2) for each of the 49 Fama and French (1997) industry groups for each year from 1999 to 2005. Accruals quality (*AQ*) is the variability in the residuals from the annual cross-sectional regressions of Equation (2), computed as the standard deviation of the residuals over the years t–4 through t for each of our sample firms. Thus, for year 2003 (2005), the standard deviation is computed using residuals over 1999 through 2003 (2001 through 2005). The standard deviation of the residuals is an *inverse* measure of accruals quality, because higher variability in the residuals indicates lower accruals quality.

Our second measure of financial reporting quality is performance-adjusted absolute discretionary accruals, *ADACC* (Ashbaugh et al. 2003; Kothari et al. 2005). We start with the following regression:

$$TA_{i,t} = \alpha_0 + \alpha_1(1/ASSETS_{i,t-1}) + \alpha_2(\Delta REV_{i,t} - \Delta AR_{i,t}) + \alpha_3 PPE_{i,t} + \varepsilon_{i,t}. \tag{3}$$

where $TA_{i,t}$ (total accruals) is computed as income before extraordinary items minus cash flow from operations, deflated by lagged total assets, $\Delta AR_{i,t}$ is change in accounts receivable, $\Delta REV_{i,t}$ is change in revenues, and $PPE_{i,t}$ is net property, plant, and equipment. $\Delta REV_{i,t}$, $\Delta AR_{i,t}$, and $PPE_{i,t}$ are scaled by prior-year total assets. The residuals from Equation (3) are discretionary accruals ($DA_{i,t}$). To adjust for performance differences across firms, we then rank firms within each Fama-French industry into deciles based on their prior year's *ROA*. We compute *ADACC* as the absolute value of the difference between the firm's *DA* and the median *DA* for its *ROA* decile. Like *AQ*, *ADACC* is an inverse measure of financial reporting quality because a higher *ADACC* indicates lower reporting quality.

Measures of Legal Expertise (*ACLE* in Equation (1))

We define a director as a legal expert if s/he has a law school degree, such as JD, LL.M., or LL.D., and/or has working experience as a lawyer at, for example, a law firm or as a legal counsel. Although our primary interest is in the effects of legal expertise on financial reporting quality, we recognize that these directors can also possess accounting expertise, in which case the latter (which has been shown to have positive effects on financial reporting quality) could account for any observed effects of legal expertise. In order to isolate the effect of legal expertise from that of accounting expertise, we define a "legal-only expert" as one with legal expertise but no accounting expertise. We construct three alternative measures of audit committee legal expertise: (1) *ACLEP*, the proportion of legal-only experts on the audit committee, defined as the number of legal-only experts divided by the number of directors on the audit committee, (2) *ACLEN*, the number of legal-only experts on the audit committee, and (3) *ACLED*, an indicator variable coded 1, if there is at least one legal-only expert on the audit committee, and 0 otherwise.

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[7] $TCA = \Delta CA - \Delta CL - \Delta CASH + \Delta STDEBT$, where ΔCA = change in current assets between years t–1 and t, ΔCL = change in current liabilities between years t–1 and t, $\Delta CASH$ = change in cash between years t–1 and t, and $\Delta STDEBT$ = change in short-term debt between years t–1 and t.

Accounting Expertise (*ACAFE* in Equation (1))

If lawyer-directors are sensitive to the legal risk associated with financial reporting quality, then they could push for more accounting financial expertise on the audit committee to oversee the financial reporting process. Thus, it could be the accounting financial expertise, and not the legal expertise, that drives financial reporting quality. Therefore, we control for audit committee accounting expertise. We focus specifically on *accounting* financial expertise, because previous research (discussed above) shows that it impacts financial reporting quality, even though financial expertise as defined by SEC (2003) includes accounting as well as nonaccounting financial expertise (DeFond et al. 2005; Krishnan and Visvanathan 2008). Analogous to our measures for legal expertise above, we define "accounting-only" experts as those with accounting but no legal expertise. We employ three variants to measure accounting expertise: (1) *ACAFEP*, the proportion of accounting-only directors on the audit committee, (2) *ACAFEN*, the number of accounting-only experts, and (3) *ACAFED*, an indicator variable for the presence of at least one accounting-only expert.

Joint Experts (*ACJOINT* in Equation (1))

We define "joint" experts as directors with both legal and accounting expertise. Three variants for *ACJOINT* are (1) *ACJOINTP*, the proportion of joint experts on the audit committee, (2) *ACJOINTN*, the number of joint experts, and (3) *ACJOINTD*, an indicator variable for the presence of at least one joint expert.

Audit Committee and Board Characteristics

We control for two audit committee characteristics that could influence financial reporting quality: the average tenure (*ACTENURE*) of directors (the natural logarithm of the average number of years on the audit committee), and audit committee size (*ACSIZE*), the (natural) logarithm of number of directors on the audit committee (Bédard et al. 2004; Carcello et al. 2010).

Although the primary responsibility for financial reporting rests with the audit committee, effective boards can further enhance the audit committee's efforts. Previous work has not examined the role of legal experts on boards, but if such experts exist outside the audit committee, they too could contribute to financial reporting quality because of their concern about litigation risk. Therefore, we include the proportion of legal experts outside the audit committee (*NACLE*) as a control variable, defined as the number of nonaudit committee legal experts divided by the number of directors on the board. We also include two characteristics relating to board composition, *INDEP* and *GREY*, the proportion of independent and affiliated board directors, respectively, which have been suggested to have important impacts on monitoring effectiveness (Carcello and Neal 2000). Because audit committees are largely independent post-SOX, we focus on the independence of the board.

Litigation Risk

We control for the industry effects of litigation risk. Francis et al. (1994) and Johnson et al. (2001) suggest that high-tech industries have higher litigation risk, and Jones and Weingram (2000) find that high-tech firms are more likely to be targets of shareholder litigation. We control for litigation risk for two reasons. First, previous researchers have hypothesized that higher *ex ante* litigation risk leads managers to be relatively more cautious in their financial reporting (Watts 2003), although this expectation has not been borne out in reported results (e.g., Ahmed and Duellman 2007). Second, firms with higher *ex ante* litigation risk could be more likely to hire directors with greater expertise, including legal experts, as part of a general strategy to adopt strong monitoring mechanisms. Following Francis et al. (1994), we include an indicator variable for high-tech industries (*LITRISK*), which equals 1 if the firm belongs to one of the following industries: pharmaceuticals (SIC codes 2833–2836), computers (3570–3577), electronics (3600–3674), programming (7371–7379), and R&D services (8731–8734).

Other Monitoring Mechanisms

We include variables to proxy for alternative monitoring mechanisms that could potentially influence the appointment of legal experts to the audit committee. Creditors use the information from financial reports to assess firm health, and would be concerned about the reliability of financial reporting (Anderson et al. 2004). We include leverage (*LEVERAGE*), measured as long-term debt divided by firm's total assets, to proxy for monitoring arising from creditors' concerns (Ahmed and Duellman 2007).

Institutional ownership serves as an alternative monitoring mechanism because institutional investors' stake and voting power in the firm gives them the incentive and the ability to influence managerial behavior (Shleifer and Vishny 1986). However, larger ownership can also enable the institutional owners to expropriate minority shareholders (Ahmed and Duellman 2007). We measure institutional ownership (*INOWN*) as the percentage equity ownership of institutional investors.

Innate Factors

Finally, Francis et al. (2005) show that *AQ* is associated with certain innate factors relating to the firm's operating environment. Likewise, Hribar and Nichols (2007) show that *ADACC* is related to firms' operating volatility. Accordingly, we include the following variables: variability in operating cash flows ($\sigma(CFO)$), variability in sales ($\sigma(SALES)$), both measured over the prior ten years, the length of the operating cycle (*OPERCYCLE*), the incidence of negative earnings (*NEGEARN*) over the prior ten years, and firm size (*SIZE*), measured by the logarithm of total assets.

IV. SAMPLE AND DATA

Sample Selection

We start with the Russell 1000 companies for the years 2003 and 2005.[8] We require each company to have 10-K/proxy statements in both years. We eliminate 306 companies in the regulated and financial industries (with SIC codes in the ranges 4900–4999 and 6000–6999, respectively) because financial reporting and regulatory requirements tend to be different for these industries. We exclude 44 "controlled" companies—i.e., public companies for which 50 percent or more of voting power is controlled by another entity, and 35 companies that went private, were merged, acquired, or delisted during 2003 or 2005. We eliminate 24 companies for which other variables are not available. The final sample consists of 591 companies and 1,182 firm-year observations.

We obtain data on firm-level characteristics from the Compustat database, and institutional ownership data from Thomson Financial. For each firm in our sample, we identify all directors from proxy (and sometimes 10-K filings), and extract information about their work experiences. Information in these filings is often missing or incomplete. Therefore, we collect supplementary information from other sources, such as LexisNexis, Google.com, the *Dun & Bradstreet Reference Book of Corporate Management, Who's Who in Finance and Industry,* and Mergent. We exclude directors who served for less than three months during the fiscal years of 2003 or 2005.[9]

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[8] Because the data on legal expertise are hand-collected, we had to restrict our starting sample to a reasonable size. We selected the Russell 1000 in preference to the S&P 500 because of the former's broader market coverage. Our primary analysis is based on the years 2003 and 2005. We chose 2003 as our first year for data collection because it is the first year following the passage of SOX. We then chose 2005, rather than 2004, to obtain a second year of data to allow for some variability in the corporate governance characteristics. Subsequent to completing our data analysis for the 2003/2005 sample, we went back to collect data for our sample firms for the year 2001. We present a pre-/post-SOX test as a supplementary analysis in Section VII.

As discussed, legal experts are directors with law degrees or with experience working in law-related positions (for example, lawyers and general counsels). Directors are designated as accounting financial experts if they possess CFA/CPA certification or have experience as auditors, chief financial (accounting) officers/controllers or in other finance/accounting related positions. Joint experts possess both forms of expertise. We code directors as independent if they are not affiliated with the company in any way other than serving as directors. Grey directors are those with financial or other links with the company directly or through other entities.

Legal Expertise on Audit Committees and Boards

Table 1, Panel A, presents the incidence of legal and accounting expertise among the directors on the audit committees and boards of our sample firms for each year.[10] There are 2,381 (2,426) audit committee directors and 3,540 (3,576) nonaudit committee directors in 2003 (2005). Overall, the proportion of directors that had legal expertise (whether or not they had accounting expertise as well) increased from 11.26 percent to 12.28 percent from 2003 to 2005. Interestingly, legal experts are as likely to serve on the audit committee as outside it. The proportion of audit committee directors with legal expertise is 10.63 percent (11.95 percent) in 2003 (2005), and the proportion of nonaudit committee directors with legal expertise is 11.69 percent (12.50 percent) in 2003 (2005).

About 24 percent (30 percent) of the directors are accounting experts, with or without legal expertise in 2003 (2005). The proportion of accounting experts outside the audit committee is significantly smaller, 8.62 percent (8.22 percent) in 2003 (2005). Finally, a very small proportion (1.64 percent and 2.10 percent of audit committee directors in 2003 and 2005, respectively) are joint experts with both legal and accounting financial expertise.

Table 1, Panel B reports the breakdown of the legal experts into those with law degrees (but no legal experience) and those with legal experience. About 38 percent (35 percent) of legal experts on audit committees in 2003 (2005) have law degrees and no legal experience.[11] About 8–11 percent have experience as legal counsels, and over 53 percent have law firm experience. There is no significant difference in the distribution of these different groups (those with law degree, or with experience as legal counsel or in a law firm) in the audit committee or outside the audit committee.[12]

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[9] Our main source of information is the "Research People" widget in the LexisNexis Academic database, which enables us to search for public figures in numerous business news and databases. Within "Research People," we used "Biographies" (and databases like "Zoom People Information" and "Marquis Who's Who" within Biographies), and "Recent News Stories" to obtain our information. We also use Google.com to supplement our search results from LexisNexis Academic.

[10] We also attempted to ascertain the exact areas of legal expertise for the directors, in order to identify those directors who had specific corporate-related expertise. However, we were unable to do this satisfactorily. In most cases (whether the information was taken from the directors' biographies or their law firms' websites), the descriptions involved multiple areas of law. The word "corporate" appeared in a vast majority of cases, sometimes by itself and in others as "corporate finance" or "corporate and business" and many others.

[11] Among these directors, 13 percent have consulting firm experience, 25 percent have experience in venture capital/investment banking, and 6 percent have accounting firm experience. Moreover, 40 percent have been CEOs and 11 percent have been politicians (e.g., congressman, mayor, governor).

[12] Approximately 11 percent of the firm-year observations have law-degree-only directors. When we split legal experts into those with law-degree-only and the others, we find that both types of legal expertise have positive effects on financial report quality, and F-tests indicate no significant difference in these effects.

TABLE 1

Legal Expertise of Directors

Panel A: Director Expertise on Audit Committees and Boards

	# (%) of Directors[a]					
	2003			2005		
	Audit Committee	Nonaudit Committee	All	Audit Committee	Nonaudit Committee	All
Directors with Legal Expertise (with or without accounting expertise)	253 (10.63)	414 (11.69)	667 (11.26)	290 (11.95)	447 (12.50)	737 (12.28)
Directors with Accounting Expertise (with or without legal expertise)	566 (23.77)	305 (8.62)	871 (14.71)	719 (29.64)	294 (8.22)	1,013 (16.88)
Directors with both Legal and Accounting Expertise	39 (1.64)	21 (0.59)	60 (1.01)	51 (2.10)	26 (0.73)	77 (1.28)
n (Total # directors)	2,381	3,540	5,921	2,426	3,576	6,002

Panel B: Legal Qualifications and Experience of Legal Experts

	# (%) of Directors					
	2003			2005		
Legal Experts with	Audit Committee	Nonaudit Committee	All	Audit Committee	Nonaudit Committee	All
Law Degree only	96 (37.94)	146 (35.27)	242 (36.28)	101 (34.83)	157 (35.12)	258 (35.01)
Legal Experience:						
Legal Counsel	22 (8.70)	34 (8.21)	56 (8.40)	33 (11.38)	36 (8.05)	69 (9.36)
Law Firm	135 (53.36)	234 (56.52)	369 (55.32)	156 (53.79)	254 (56.82)	410 (55.63)
n (Directors with Legal Expertise)	253	414	667	290	447	737

Panel C: Work Experience of Legal Experts

	# (%) of Directors[b]					
	2003			2005		
Legal Expert with	Audit Committee	Nonaudit Committee	All	Audit Committee	Nonaudit Committee	All
CPA Certification	30 (11.86)	11 (2.66)	41 (6.15)	34 (11.72)	14 (3.13)	48 (6.51)
CFO Experience	7 (2.77)	7 (1.69)	14 (2.10)	12 (4.14)	11 (2.46)	23 (3.12)
Other accounting experience (e.g., Treasurer, VP Finance)	2 (0.79)	3 (0.72)	5 (0.75)	5 (1.72)	1 (0.22)	6 (0.81)
CEO Experience	54 (21.34)	91 (21.98)	145 (21.74)	56 (19.31)	110 (24.61)	166 (22.52)

(continued on next page)

TABLE 1 (continued)

	# (%) of Directors[b]					
	2003			2005		
Legal Expert with	**Audit Committee**	**Nonaudit Committee**	**All**	**Audit Committee**	**Nonaudit Committee**	**All**
COO Experience	10 (3.95)	23 (5.56)	33 (4.95)	13 (4.48)	28 (6.26)	41 (5.56)
President Experience	55 (21.74)	88 (21.26)	143 (21.44)	56 (19.31)	103 (23.04)	159 (21.57)
n	253	414	667	290	447	737

[a] In Panel A, the column percentages do not add up to 100 because they are confined to two kinds of expertise.

[b] In Panel C, the column percentages do not add up to 100 because they are confined to the listed forms of work experiences.

Table 1, Panel C shows the CPA certification status and work experiences of the legal experts. The first three lines (CPA certification, CFO experience, and other accounting experience) indicate accounting financial expertise.[13] A small proportion (11–12 percent) of audit committee legal experts are CPAs. The positions most commonly held by the audit committee legal experts (about 19–25 percent in each year), both on and off the audit committee, are those of CEO or President, which are not classified as positions with accounting financial expertise.

Summary Statistics

Panels A and B of Table 2 present descriptive statistics for the full sample, and differences across firm-year observations with and without legal-only expertise, respectively. The median total assets and sales for our sample firms (not tabulated) are \$3.2 billion and \$3.0 billion, respectively.

The mean proportion of legal-only experts (*ACLEP*) on audit committees is 9 percent, the number of legal-only experts (*ACLEN*) on the audit committee ranges from 0 to 4, and 31 percent of firm-year observations have at least one legal-only expert (*ACLED*) on the audit committee.[14] The breakdown of these numbers for the two sample years (untabulated) indicates increases from 2003 to 2005. For example, the proportion of firm-year observations with at least one legal-only expert on the audit committee increased from 31 percent to 33 percent.

The average proportion of accounting-only experts (*ACAFEP*) on audit committees is 26 percent, with 72 percent of audit committees including at least one accounting-only expert (*ACAFED*). By contrast, the mean proportion of joint experts on the audit committee (*ACJOINTP*) is only 2 percent, and only 7 percent of audit committees have at least one joint expert (*ACJOINTD*). The proportion of legal experts outside the audit committee (*NACLE*) is 7 percent. The average proportion of independent directors (*INDEP*) and affiliated (*GREY*) directors is 78 percent and 11 percent, respectively.

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[13] Directors with multiple forms of expertise are classified as follows. For those with accounting financial expertise, we retained the accounting position regardless of other positions they held. For others, we classified them in the highest position they held.

[14] This proportion is different from the proportion of directors in Table 1, Panel A because these are different constructs. The proportion in Table 1 is the ratio of the total number of legal experts across all firms to the total number of directors across all firms. The proportion in Table 2 is the average of the *firm-level* ratio of the number of legal experts to number of directors.

TABLE 2

Descriptive Statistics

Panel A: Descriptive Statistics

Variable	**Mean**	**Median**	**Std. Dev.**	**Min.**	**Max.**
Dependent Variables					
AQ	0.061	0.048	0.052	0.002	0.367
ADACC	0.048	0.043	0.062	0.003	0.154
Audit Committee Legal-Only Expertise					
ACLEP (Proportion)	0.093	0.000	0.102	0.000	0.667
ACLEN (#)	0.252	0.000	0.419	0.000	4.000
ACLED (indicator for at least one)	0.310	0.000	0.370	0.000	1.000
Audit Committee Accounting-Only Expertise					
ACAFEP (Proportion)	0.263	0.253	0.222	0.000	1.000
ACAFEN (#)	0.988	1.000	0.804	0.000	4.000
ACAFED (indicator for at least one)	0.723	1.000	0.452	0.000	1.000
Audit Committee Joint Expertise					
ACJOINTP (Proportion)	0.021	0.000	0.074	0.000	0.667
ACJOINTN (#)	0.072	0.000	0.354	0.000	2.000
ACJOINTD (indicator for at least one)	0.071	0.000	0.291	0.000	1.000
Other Audit Committee and Board Variables					
NACLE	0.070	0.000	0.093	0.000	0.444
ACTENURE (Logarithm)	1.754	1.832	0.653	−1.011	3.302
ACSIZE (Logarithm)	1.320	1.388	0.258	0.000	2.402
INDEP	0.776	0.777	0.119	0.313	1.000
GREY	0.110	0.104	0.124	0.000	0.750
Other Variables					
LITRISK	0.200	0.000	0.402	0.000	1.000
LEVERAGE	0.203	0.184	0.172	0.000	1.384
INOWN (%)	73.188	74.971	15.902	0.000	100.000
SIZE	8.162	7.964	1.330	4.393	13.530
$\sigma(CFO)$	0.060	0.049	0.062	0.011	0.932
$\sigma(SALES)$	0.210	0.162	0.174	0.001	1.900
OPERCYCLE	4.672	4.720	0.691	1.840	7.402
NEGEARN	0.141	0.000	0.211	0.000	1.000
Observations	1,182				

Panel B: Test of Difference in Means

Variable	**Firms with Legal-Only Experts on Audit Committee**	**Firms with No Legal-Only Experts on Audit Committee**	**t-test for Difference in Means**
AQ	0.062	0.071	−2.04**
ADACC	0.044	0.060	−2.14**
NACLE	0.081	0.068	2.42**
ACTENURE	1.991	1.914	1.86*
ACSIZE	1.462	1.353	5.88***
INDEP	0.710	0.711	−0.27
GREY	0.113	0.111	0.02
LITRISK	0.354	0.511	−4.25***

(continued on next page)

TABLE 2 (continued)

Variable	Firms with Legal-Only Experts on Audit Committee	Firms with No Legal-Only Experts on Audit Committee	t-test for Difference in Means
LEVERAGE	0.222	0.192	2.03**
INOWN	0.740	0.733	1.00
SIZE	8.221	8.143	0.81
σ(CFO)	0.058	0.060	−1.03
σ(SALES)	0.192	0.213	−1.30
OPERCYCLE	4.624	4.677	−1.00
NEGEARN	0.124	0.142	−0.92
Observations	319	863	

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*, **, *** Statistical significance at the 10 percent, 5 percent, and 1 percent levels (two-tailed), respectively.

Variable Definitions:
AQ = accruals quality, measured by the standard deviation of the residuals in Equation (2) over years *t*–4 through *t*;
ADACC = performance-adjusted discretionary accruals, measured by the absolute value of the residual from Equation (3);
ACLEP = proportion of directors on the audit committee with legal expertise but no accounting expertise;
ACLEN = number of directors on the audit committee with legal expertise but no accounting expertise;
ACLED = 1 if *ACLEP* > 0, and 0 otherwise;
ACAFEP = proportion of directors on the audit committee with accounting expertise but no legal expertise;
ACAFEN = number of directors on the audit committee with accounting expertise but no legal expertise;
ACAFED = 1 if *ACAFEP* > 0, and 0 otherwise;
ACJOINTP = proportion of directors on the audit committee with both accounting expertise and legal expertise;
ACJOINTN = number of directors on the audit committee with both accounting expertise and legal expertise;
ACJOINTD = 1 if *ACJOINTP* > 0, and 0 otherwise;
NACLE = the number of nonaudit committee legal experts divided by the total number of directors on the board;
ACTENURE = the logarithm of the average tenure (number of years) of audit committee members;
ACSIZE = the logarithm of the number of audit committee members;
INDEP = proportion of independent directors on the board;
GREY = proportion of affiliated directors on the board;
LITRISK = 1 if the firm belongs to one of the following SIC groups: 2833–2836 (pharmaceuticals), 3570–3577 (computers), 3600–3674 (electronics), 7371–7379 (programming), and 8731–8734 (R&D services), and 0 otherwise;
LEVERAGE = long-term debt (Compustat item DLTT)/total assets (Compustat item AT);
INOWN = percentage of equity owned by institutional investors;
SIZE = log of total assets (Compustat item AT) at the start of the year;
σ(CFO) = standard deviation of operating cash flow (Compustat item OANCFC), measured over the previous 10 years;
σ(SALES) = standard deviation of sales (Compustat item SALE), measured over the previous 10 years;
OPERCYCLE = log of (days in account receivables, Compustat item RECT + days sales in inventory, Compustat item INVT); and
NEGEARN = proportion of years with negative earnings before extraordinary items (Compustat item IBY) over the previous 10 years.

In Table 2, Panel B, the means for *AQ* and *ADACC* are both lower for firm-years with audit committee legal-only expertise than for those with no legal-only expertise, indicating that legal-only expertise is associated with *higher* financial reporting quality. Firm-years with legal-only experts on their audit committees have more legal experts outside the audit committee (*NACLE*), directors with longer tenures (*ACTENURE*), and larger audit committees (*ACSIZE*) than firm-years with no legal-only experts. Legal-only expertise is also positively related to leverage (*LEVERAGE*). Somewhat surprisingly, firms with legal-only expertise are less likely to be operating in high-litigation-risk industries (*LITRISK*). Because *LITRISK* industries are more prone to litigation than most other industries, and would likely benefit more from board legal expertise, this finding suggests that supply-side factors—i.e., legal experts being less willing to supply their services to high-litigation industries (Linck et al. 2009)—are likely to be important.

V. MULTIVARIATE RESULTS

Table 3 presents regressions results for Equation (1), with *AQ* (columns (1)–(3)) and *ADACC* (columns (4)–(6)) as dependent variables. For all regressions (in this and subsequent tables) we use Huber-White standard errors, with observations clustered at the firm level.[15]

Recall that we measure legal-only expertise, accounting-only expertise, and joint expertise as ratios (proportion of the audit committee, *ACLEP*, *ACAFEP*, *ACJOINTP*), numbers (number of directors with each expertise, *ACLEN*, *ACAFEN*, *ACJOINTN*), and indicator variables (at least one director with each expertise, *ACLED*, *ACAFED*, *ACJOINTD*). In columns (1) and (4), (2) and (5), and (3) and (6), we present results using the proportion, numbers, and indicator variables, respectively. In columns (1)–(3), all measures of audit committee legal expertise have negative and significant coefficients, indicating that legal-only expertise is negatively associated with *AQ*. Similarly, in columns (4)–(6), all measures of audit committee legal-only expertise are negatively associated with *ADACC*. Because both *AQ* and *ADACC* are inverse measures of reporting quality, our findings suggest that, after controlling for other factors, audit committee legal-only expertise is positively associated with financial reporting quality.[16] The coefficients on the legal-only expertise variables are larger in absolute value than are those for the accounting-only expertise variables. Because the incidence of accounting expertise is much higher than that of legal expertise, we computed the proportionate change in the financial reporting variables, around the mean values for *AQ* and *ADACC*. Using the coefficients in columns (2) and (5), we find that the addition of a legal-only expert is associated with a 36 percent (17 percent) decrease in *AQ* (*ADACC*), and the addition of an accounting-only expert is associated with a 5 percent (8 percent) decrease in *AQ* (*ADACC*).[17]

Audit committee accounting-only expertise is negatively associated with both *AQ* and *ADACC* (columns (1) through (6)), indicating, consistent with prior research, that accounting-only expertise confers benefits to financial reporting quality. Surprisingly, the coefficients for joint expertise are not significant in any column. However, only a very small proportion (7 percent of firm years or 80 firm-year observations in all) has at least one joint expert, such that the statistical power of the tests pertaining to them is relatively low.

Results for the control variables are, in general, consistent with previous research. Firm size (*SIZE*) is negatively associated with, and *LITRISK* is positively related with, both *AQ* and *ADACC*.[18]

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[15] Correlations among the control variables are generally low, with the exception of that between *INDEP* and *GREY*, which is −0.74. Variance inflation factors are all less than 3, suggesting that multicollinearity is not a concern.

[16] An active audit committee can also ensure good-quality financial reporting. To the extent that lawyer-directors encourage increased activity, our legal expertise variables could be capturing such increased activity. As a sensitivity test, we control for audit committee activity by including the number of meetings (*ACMEET*) during the year as an additional variable. Our results pertaining to the expertise variables remain unchanged. *ACMEET* is insignificant.

[17] We compute the proportionate change in *ADACC* (at the sample mean value) as (−0.008/0.048), where −0.008 is the coefficient in column (5) of Table 3, and 0.048 is the mean for *ADACC*. The computation for the proportionate change in *AQ* is similar. The tenor of the differences in the effect of the *ACLE* and *ACAFE* variables is similar for the other columns in Table 3 (and in the models in Table 4). To examine this further, we compare the effects of the two kinds of expertise in audit committees consisting of *only* one or the other kind of expertise. Specifically, we drop all firm-year observations for which the audit committees have both legal and accounting experts, and neither legal nor accounting experts. We estimate Equation (1) for this sample, including the *ACLE* variables and all control variables. We find that, for all six models (three models each for *AQ* and *ADACC* as in Table 3), the *ACLE* variables have insignificant coefficients, indicating that there is no difference in the effects of the two kinds of expertise on financial reporting quality for audit committees that have one or the other expertise.

[18] In additional analysis, we include interactions of *LITRISK* and the legal expertise variables to examine whether the effect of legal expertise differs across high- and low- litigation industries. The coefficients for the *ACLE* variables are negative and significant in this expanded model. However, the interaction is not statistically significant, indicating that the association between legal expertise and financial reporting quality does not differ across high- and low-litigation-risk industries.

TABLE 3

Accruals Quality, Discretionary Accruals, and Audit Committee Legal Expertise

	Dependent Variable: Accruals Quality (*AQ*)			Dependent Variable: Discretionary Accruals (*ADACC*)		
	Legal-Only, Accounting-Only, and Joint Expertise Measured by					
	Proportion (1)	# Experts (2)	Indicator (3)	Proportion (4)	# Experts (5)	Indicator (6)
Legal-Only Expertise (*ACLEP*, *ACLEN*, *ACLED*)	−0.102**	−0.022*	−0.031*	−0.014**	−0.008**	−0.009**
	(−2.22)	(−1.90)	(−1.92)	(−2.34)	(−2.05)	(−2.39)
Accounting-Only Expertise (*ACAFEP*, *ACAFEN*, *ACAFED*)	−0.010**	−0.003**	−0.006**	−0.007**	−0.004**	−0.004**
	(−2.30)	(−2.22)	(−2.40)	(−2.10)	(−2.20)	(−2.37)
Joint Expertise (*ACJOINTP*, *ACJOINTN*, *ACJOINTD*)	−0.012	−0.002	−0.003	−0.002	−0.001	−0.001
	(−1.55)	(−1.42)	(−1.50)	(−1.60)	(−1.39)	(−1.48)
NACLE	−0.005	−0.006	−0.005	−0.015	−0.014	−0.017
	(−1.29)	(−1.32)	(−1.27)	(−0.67)	(−0.74)	(−0.77)
ACTENURE	0.002	0.002	0.001	−0.009	−0.009	−0.009
	(0.44)	(0.44)	(0.29)	(−1.35)	(−1.35)	(−1.55)
ACSIZE	−0.016**	−0.016**	−0.019**	−0.011	−0.011	−0.011
	(−1.97)	(−1.97)	(−2.54)	(−1.31)	(−1.31)	(−1.23)
INDEP	−0.036	−0.036	−0.035	−0.056**	−0.056**	−0.057**
	(−1.07)	(−1.07)	(−1.13)	(−2.36)	(−2.36)	(−2.48)
GREY	0.008	0.008	0.009	0.056	0.056	0.057
	(0.43)	(0.43)	(0.45)	(1.20)	(1.20)	(1.27)
LITRISK	0.023***	0.023***	0.023***	0.012**	0.012**	0.012*
	(3.65)	(3.65)	(3.70)	(1.96)	(1.96)	(1.91)
LEVERAGE	0.046***	0.046***	0.046***	0.051***	0.051***	0.052***
	(3.07)	(3.07)	(3.03)	(2.76)	(2.76)	(2.80)
INOWN	0.016	0.016	0.016	−0.003	−0.003	−0.004
	(1.54)	(1.54)	(1.56)	(−1.23)	(−1.23)	(−1.25)
SIZE	−0.005***	−0.005***	−0.005***	−0.001**	−0.001**	−0.001**
	(−2.95)	(−2.95)	(−2.89)	(−2.43)	(−2.43)	(−2.42)
$\sigma(CFO)$	0.270***	0.270***	0.269***	0.051**	0.051**	0.048**
	(2.77)	(2.77)	(2.75)	(2.48)	(2.48)	(2.45)
$\sigma(SALES)$	0.035***	0.035***	0.034***	0.013**	0.013**	0.013**
	(2.89)	(2.89)	(2.83)	(2.08)	(2.08)	(2.08)
OPERCYCLE	0.006*	0.006*	0.006*	0.007**	0.007**	0.006**
	(1.86)	(1.86)	(1.89)	(2.30)	(2.30)	(2.49)
NEGEARN	0.020*	0.020*	0.019*	0.027**	0.027**	0.026**
	(1.79)	(1.79)	(1.80)	(2.44)	(2.44)	(2.42)
YR05	−0.012	−0.012	−0.011	−0.009**	−0.009**	−0.010**
	(−1.32)	(−1.30)	(−1.33)	(−2.02)	(−2.01)	(−2.01)

(continued on next page)

TABLE 3 (continued)

	Dependent Variable: Accruals Quality (*AQ*)			Dependent Variable: Discretionary Accruals (*ADACC*)		
	Legal-Only, Accounting-Only, and Joint Expertise Measured by					
	Proportion (1)	# Experts (2)	Indicator (3)	Proportion (4)	# Experts (5)	Indicator (6)
Constant	0.022	0.022	0.022	0.020	0.020	0.019
	(0.77)	(0.77)	(0.90)	(1.58)	(1.58)	(1.55)
Observations	1,182	1,182	1,182	1,182	1,182	1,182
Adjusted R^2	0.58	0.58	0.58	0.24	0.24	0.24

*, **, *** Statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
YR05 = 1, if the fiscal year is 2005, and 0 otherwise. Other variables are defined in Table 2. Standard errors are corrected using the Huber-White procedure, based on clustering by firm. Two-tailed t-statistics are reported in parentheses.

Leverage, operating cash flow volatility, sales volatility, the length of the operating cycle, and the incidence of negative earnings are all positively related to *AQ* and *ADACC*. Two other variables have significant coefficients for one of the two measures of financial reporting quality. Specifically, audit committee size is negatively associated with *AQ*, and the proportion of independent directors on the board is negatively associated with *ADACC*.[19]

Nonaccounting Financial Expertise

The results above indicate that legal expertise contributes positively to financial reporting quality beyond the positive effects of accounting expertise. As discussed, our definition of accounting expertise corresponds to the narrow definition of "financial expertise" described in SEC (2002) rather than the broader definition in the SEC's final rule (SEC 2003), which includes both accounting expertise and other nonaccounting "supervisory expertise" obtained from having held positions such as CEO, President, or COO. Although previous research indicates that such supervisory expertise does not seem to enhance the quality of financial reporting, we examine whether the observed effects of legal expertise could possibly derive from supervisory expertise possessed by the lawyer-directors.[20] Table 1, Panel C, indicates that about 47 percent (43 percent) of the legal experts in 2003 (2005) on audit committees possess supervisory expertise. We estimate an augmented version of Equation (1), adding measures of supervisory-only expertise (numbers, proportion, and indicator variable) and of joint legal-supervisory expertise. The results (untabulated) for legal-only expertise, accounting-only expertise, and joint legal-accounting expertise are similar to those in Table 3. In addition, using both *ADACC* and *AQ*, and for all three forms of the supervisory-expertise measures, we find that, consistent with previous research, supervisory-only expertise has no impact on financial reporting quality. However, joint legal-supervisory expertise has significant negative coefficients for both financial reporting quality measures and for all three versions (proportion, numbers, and indicator) of the expertise measures, albeit with relatively high p-values (close to 0.1) in five out of the six regressions. These results suggest that the improvement in reporting quality can be attributed to legal expertise rather than to supervisory expertise.[21]

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[19] *NACLE*, the proportion of legal experts outside the audit committee, is not significant. In sensitivity tests, we change the specification of this variable (using proportion, number, or indicator) to correspond with the *ACLE* variables, and find results similar to those reported. Other sensitivity tests include (1) using audit committee size in place of its logarithmic form, (2) replacing audit committee size with board size, and (3) replacing *INDEP* and *GREY*, which are measured at the board level, with similar variables measured at the audit committee level. Our results are similar to those reported. We also estimate yearly models to check for inter-year differences. All three legal-only expertise variables have negative and significant coefficients in both years.

[20] SEC (2003) requires companies to identify the "audit committee financial expert" on their audit committees. As a further sensitivity test, we replace *ACAFEP* by *ACAFED*, the proportion of designated experts on audit committees. All *ACLE* variables continue to have negative significant coefficients. *ACAFED* however has an insignificant coefficient, possibly because company-designated experts often do not possess financial or accounting expertise (Carcello et al. 2006).

"Legal-Intensity" of Financial Reporting

As we discussed, legal expertise can be particularly useful for firms with relatively more transactions requiring formal legal contracts, or with financial activities with litigation implications. We attempt to proxy for such "legal-intensity" in the financial reporting for our sample firms by determining (through a keyword search of their 10-K filings) if they have any of the following transactions or activities: (1) merger or acquisitions in the past year, (2) litigation or insurance settlements in the past year, (3) sale of assets in the past year, (4) a policy of dividend distributions (proxied by the payment of regular dividends in the past five years), (5) presence of special purpose entity (entities), and (6) the use of capital leases. We create indicator variables for each of the six items. The sum of the six indicator variables provides a legal-intensity score, ranging from 0 to 6, for each firm. The mean (median) score is 1.6 (2). We classify a firm as a high-legal-intensity firm ($LEGINT = 1$), if its score is above the median, and as a low-legal-intensity firm otherwise ($LEGINT = 0$). We then re-estimate the model in Table 3, including *LEGINT* and the interaction of the *ACLE* variables with *LEGINT*. The results (untabulated) for the *ACLE* variables are similar to those in Table 3. Also, *LEGINT* is not significant. The interaction of *ACLE* and LEGINT is negative and significant (p-value = 0.07) for two out of the three *ACLE* measures when we use *ADACC* as the measure of financial reporting quality, but insignificant when we use *AQ* as the measure of financial reporting quality. To the extent that *LEGINT* captures legal-intensity, there is some weak evidence that the positive effect of legal expertise on financial reporting quality is greater for firms with transactions or activities with more legal content.

Endogeneity of Audit Committee Legal Expertise

Although our results indicate that directors' legal expertise is positively associated with firms' financial reporting quality, other explanations are possible. Specifically, our findings are also consistent with the possibility that directors with legal expertise would choose (out of caution) to work at firms with better financial reporting quality, or that firms with a preference for good-quality financial reporting will select an experienced board of directors, including legal experts, to "signal" the quality of financial reporting. To mitigate these concerns, we present three alternative models to further examine the relation between directors' legal expertise and financial reporting quality, using (1) a difference-on-difference approach, (2) a lagged variables approach, and (3) an instrumental variables approach. Table 4 presents these results. For brevity, we suppress the results for the control variables.

In Table 4, Panel A, we present results for the difference-on-difference approach. We estimate Equation (1), but with all variables specified as the change in their values from 2003 to 2005

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[21] Expertise resulting from additional directorships can also contribute positively to financial reporting quality if it enhances director skills and knowledge. However, additional directorships can have a negative effect if it results in directors over-extending themselves. Previous research results are mixed (Beasley 1996; Carcello and Neal 2003; Ahmed and Duellman 2007). As a sensitivity test, we include the average number of outside directorships held by audit committee members in our model. The results for the legal-only expertise variables remain unchanged, and the outside directorships variable is not significant.

(Ashbaugh-Skaife et al. 2008; Carcello et al. 2010).[22] As Ashbaugh-Skaife et al. (2008) point out, *AQ* does not lend itself to a change analysis because it is based on a five-year standard deviation of the residuals in Equation (2), such that the 2003 and 2005 computations of *AQ* have three years of past data in common. Consequently, we conduct the change analysis only for *ADACC*. The results are consistent with those in Table 3. The coefficients on the legal-only expertise variables are significant and negative, suggesting that the association between legal expertise and financial reporting quality is consistent with legal expertise playing a "monitoring" rather than a "signaling" role. As before, the accounting-only expertise variables are significant and negative, and the joint expertise variables are insignificant.

Table 4, Panel B presents results for the lagged-variables approach (Fich and Shivdasani 2006, 703). We regress *AQ* and *ADACC* for the year 2005 on lagged legal-only, accounting-only, and joint expertise variables—i.e., the *ACLE*, *ACAFE*, and *ACJOINT* variables for 2003, and the other control variables. This model addresses the possibility of reverse causality. Columns (1)–(3) (columns (4)–(6)) present results using *AQ* (*ADACC*) as the dependent variable. Coefficients for the lagged *ACLE* and *ACAFE* variables are significant and negative across all specifications, and those for the *ACJOINT* variables are insignificant.

Table 4, Panel C presents results for the instrumental variables approach (Larcker and Rusticus 2010). In order to identify instrumental variables for legal expertise, we look for firm characteristics that are related to the prevalence of lawyer-directors but have little linkage with the firm's *AQ* or *ADACC*. We select two characteristics of firms' operations that can serve as viable instrumental variables, environmental regulation costs (*ENVMNT*), and patent activity (*PATENTS*). First, directors' legal expertise is likely to be particularly useful for firms that face environmental regulation costs (Agrawal and Knober 2001). We use data compiled by KLD Research & Analytics, Inc. (an investment research firm that is part of the RiskMetrics Group) on firms' performance on environmental issues. Using the scores provided for seven dimensions of environmental issues, we construct a summary score for each firm, and rank the firms into quartiles based on this score.[23] The quartile ranking (*ENVMNT*) is an inverse proxy for environmental regulation costs, meaning that regulation costs can be expected to be lower the higher a firm's quartile ranking. Second, firms that deal with the patent-application process and legal issues involved with patents or licensing, are more likely to appoint directors with legal backgrounds. We obtain data on the number of patents from the United States Patent and Trademark Office website (http://www.uspto.gov/).

Using the two instrumental variables, we estimate a two-stage least-squares (2SLS) model. In the first stage, we regress *ACLE* on *ENVMNT*, *PATENTS* (the logarithm of the number of patents), and control variables, which include all of the variables in Table 3. We expect a negative (positive) association between *ENVMNT* (*PATENTS*) and audit committee legal expertise. We generate the predicted value for *ACLE* from the first-stage equation. In the second stage, we estimate Equation (1) using predicted *ACLE* in place of *ACLE*.

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[22] We examine changes from 2003 to 2005 and not for 2002–2003 and 2004–2005 because we do not have data for the expertise variables, which are hand-collected, for years other than 2003 and 2005. Similarly, in Table 4, Panel B, we present lagged analysis using 2003 variables as the lagged variables.

[23] KLD provides ratings for 3,000 large U.S. companies (including the Russell 1000) on their performance in several "qualitative issue areas" including the environment. The seven dimensions that comprise the environment category are based on whether the firm (1) has substantial revenues from innovative remediation products, (2) has a notably strong pollution prevention program, (3) is a substantial user of recycled materials as raw materials, (4) has taken significant measures to reduce its impact on climate change and air pollution, (5) is a signatory to the CERES Principles, (6) maintains its property, plant, and equipment with above-average environmental performance, and (7) has demonstrated a superior commitment to other environmentally proactive activities (http://www.kld.com). See Orlitzky et al. (2003) for examples of studies that use the KLD database.

TABLE 4

Endogeneity of Audit Committee Legal Expertise

Panel A: Change Model Results[a]

	Dependent Variable: ΔDiscretionary Accruals		
	Legal-Only, Accounting-Only, and Joint Expertise Measured by		
	Proportion (1)	# Experts (2)	Indicator (3)
ΔLegal-Only Expertise	−0.015*	−0.010*	−0.012*
(*ΔACLEP*, *ΔACLEN*, *ΔACLED*)	(−1.84)	(−1.90)	(−1.89)
ΔAccounting-Only Expertise	−0.012**	−0.010*	−0.008*
(*ΔACAFEP*, *ΔACAFEN*, *ΔACAFED*)	(−2.00)	(−1.77)	(−1.91)
ΔJoint Expertise	−0.002	−0.002	−0.003
(*ΔACJOINTP*, *ΔACJOINTN*, *ΔACJOINTD*)	(−1.23)	(−1.03)	(−1.41)
Control Variables	Included	Included	Included
Observations	591	591	591
Adjusted R^2	0.14	0.14	0.14

Panel B: Lagged Audit Committee Legal and Accounting Expertise[b]

	Dependent Variable					
	Accruals Quality (*AQ*)			Discretionary Accruals (*ADACC*)		
	Legal-Only, Accounting-Only, and Joint Expertise Measured by					
	Proportion (1)	# Experts (2)	Indicator (3)	Proportion (4)	# Experts (5)	Indicator (6)
Legal-Only Expertise (lag)	−0.144**	−0.029**	−0.042**	−0.017**	−0.008**	−0.009**
(*ACLEP*, *ACLEN*, *ACLED*)	(−2.18)	(−1.99)	(−1.98)	(−2.40)	(−2.11)	(−2.21)
Accounting-Only Expertise (lag)	−0.033**	−0.004**	−0.005**	−0.010**	−0.006**	−0.005**
(*ACAFEP*, *ACAFEN*, *ACAFLED*)	(−2.20)	(−1.98)	(−2.21)	(−2.20)	(−2.28)	(−2.20)
Joint Expertise (lag)	−0.006	−0.000	−0.001	−0.002	−0.002	−0.002
(*ACJOINTP*, *ACJOINTN*, *ACJOINTD*)	(−0.99)	(−0.56)	(−0.72)	(−0.42)	(−0.67)	(−1.00)
Control Variables	Included	Included	Included	Included	Included	Included
Observations	591	591	591	591	591	591
Adjusted R^2	0.58	0.58	0.58	0.34	0.34	0.34

(continued on next page)

TABLE 4 (continued)

Panel C: Two-Stage Least Squares (2SLS) Estimates[c]

	Dependent Variable					
	Accruals Quality (*AQ*)			**Discretionary Accruals (*ADACC*)**		
	Legal-Only and Accounting-Only Expertise Measured by					
	Proportion (1)	**# Experts (2)**	**Indicator (3)**	**Proportion (4)**	**# Experts (5)**	**Indicator (6)**
Legal-Only Expertise (*ACLEP, ACLEN, ACLED*)	−0.222** (−2.21)	−0.035** (−2.31)	−0.049** (−2.20)	−0.021** (−2.50)	−0.013** (−2.42)	−0.015** (−2.22)
Accounting-Only Expertise (*ACAFEP, ACAFEN, ACAFED*)	−0.029** (−2.40)	−0.007** (−2.20)	−0.009** (−2.16)	−0.011** (−2.09)	−0.007** (−2.52)	−0.009* (−1.89)
Control Variables	Included	Included	Included	Included	Included	Included
Hausman statistic (p-value)	5.1 (0.02)	5.3 (0.02)	5.6 (0.02)	4.4 (0.04)	4.7 (0.03)	5.1 (0.02)
Hansen's J statistic (p-value)	0.6 (0.44)	0.5 (0.48)	0.5 (0.47)	0.4 (0.52)	0.3 (0.58)	0.3 (0.59)
Observations	1,102	1,102	1,102	1,102	1,102	1,102
Adjusted R^2	0.42	0.42	0.42	0.19	0.20	0.20

*, ** Statistical significance at the 10 percent and 5 percent levels, respectively.

[a] Panel A reports the results of the change models, with all variables defined as differences (denoted by Δ) between their 2005 and 2003 values. For brevity, we only report the coefficients for the test variables.

[b] Panel B reports the results of estimating the model in Table 3, using the year 2005 values for *AQ* and *ADACC*, and lagged (2003) values of the *ACLE*, *ACAFE*, and *ACJOINT* variables, and all control variables. For brevity, only the test variable results are reported.

[c] Panel C reports the second-stage results of a 2SLS regression of *AQ* (or *ADACC*). Observations with joint experts are eliminated for this test (see footnote 24). In the first stage we estimate the following regression:

$$ACLE_{i,t} = \alpha_0 + \delta_1 ENVMNT_{i,t} + \delta_2 PATENTS_{i,t} + \delta_{3-13}\text{Controls}_{i,t} + \zeta_{i,t}.$$

In the second stage we estimate the model in Table 3, replacing the *ACLE* variables with their predicted values obtained from the first-stage estimates. For brevity, we only report the results for the test variables. The Hausman endogeneity test (for the null hypothesis that the legal variables can be treated as exogenous) is significant in all columns, indicating the existence of endogeneity. The Hansen J-statistic, which tests for over-identification, is insignificant in all columns, suggesting the absence of over-identification. Two-tailed t-statistics are reported in parentheses. All other variables are defined in Table 2.

Variable Definitions:
ENVMNT = quartile ranking of a composite Environment score (using data provided by KLD Research & Analytics, Inc.) for the firm for each sample year (inverse proxy for environment regulation costs); and
PATENTS = (logarithm of) number of patents of the firm for each sample year.

In the first-stage regressions (not tabulated), using each of our legal expertise variables as the dependent variable, we find that both instruments (*ENVMNT* and *PATENTS*) have the predicted signs and are significant, suggesting that environmental regulation costs and patents are related to the appointment of legal experts. Table 4, Panel C presents the second stage results, with *AQ* (Columns (1)–(3)) and *ADACC* (Columns (4)–(6)) as the dependent variables.[24] The results in all columns indicate that, after controlling for endogeneity, the legal-only expertise and accounting-only expertise variables still show negative and significant coefficients.[25]

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[24] This test treats legal-only-expertise and financial reporting quality as the endogenous variables, while treating accounting-only expertise as exogenous. Because this implies that joint expertise is partly endogenous, and their small numbers do not allow separate treatment as a third endogenous variable, we dropped observations with joint experts from this analysis.

Alternative Measures of Financial Reporting Quality

As supplementary analysis, we use two measures of accounting conservatism to proxy for financial reporting quality (Beaver and Ryan 2000; Ahmed and Duellman 2007). Accounting conservatism can lower litigation risk because it reduces managers' ability to withhold information about expected losses or to overstate earnings and net assets (Watts 2003). Consequently, legal experts could push for conservative accounting policies to lower litigation risk.

Our first conservatism measure, *CONMKT*, is a market-based measure, defined as the firm's book-to-market ratio minus the industry median value of book-to-market ratio, multiplied by −1. Higher values indicate greater conservatism. We regress *CONMKT* on the three variants of *ACLE*, *ACAFE*, *ACJOINT*, and control variables. The control variables include those defined above (*LITRISK*, *ACCEXP*, *NACLE*, *INDEP*, *GREY*, *ACSIZE*, *ACTENURE*, *LEVERAGE*, *INOWN*, and *SIZE*) and others included in Ahmed and Duellman (2007): *R&D* (R&D expense scaled by sales), *CFO* (cash flow from operations scaled by average total assets), *G-INDEX* (a governance index based on Gompers et al. [2003]), and *SALESGR* (geometric growth rate of sales over the previous three years). Following Beaver and Ryan (2000), we also control for the current and six-year lagged buy-and-hold returns.

Table 5, Panel A presents the results. All measures of audit committee legal expertise and accounting expertise are positively associated with *CONMKT*, indicating that legal-only and accounting-only expertise on audit committees are positively associated with market conservatism. The coefficient on joint expertise is not significant.

Our second conservatism measure is the asymmetric timeliness of earnings, using the Basu (1997) model, as modified by Roychowdhury and Watts (2007). The basic model is as follows:

$$E_{i,t}/P_{i,t-3} = \alpha_0 + \beta_1 D_{i,t} + \beta_2 Return_{i,t} + \beta_3 Return_{i,t} * D_{i,t} + \text{Controls} + \varepsilon_t \qquad (4)$$

where $E_{i,t}$ is the cumulative earnings (income before extraordinary items) over the years t, $t-1$, and $t-2$. $P_{i,t-3}$ is the market value of equity at the end of the year $t-3$. $Return_{i,t}$ is buy-and-hold returns for the period from month 4 of fiscal year $t-2$ up to month 4 of fiscal year t. $D_{i,t}$ is an indicator variable that equals 1 when $Return_{i,t}$ is negative, and 0 otherwise. The coefficient β_3 measures the base cumulative asymmetric timeliness of earnings when all control variables are set to zero. We augment this model by adding the *ACLE*, *ACAFE*, and *ACJOINT* variables, their interactions with $D_{i,t}$, their interactions with $Return_{i,t}$, and their interactions with $Return_{i,t} * D_{i,t}$. Then the coefficient for $ACLE * Return_{i,t} * D_{i,t}$ captures the incremental effect of audit committee legal-only expertise on the cumulative asymmetric timeliness of earnings. We include the following control variables: *NACLE*, *INDEP*, *GREY*, *ACSIZE*, *ACTENURE*, *LEVERAGE*, *INOWN*, *SIZE*, *R&D*, *CFO*, and *SALESGR*.

Table 5, Panel B presents the results. The coefficient for $ACLE * Return_{i,t} * D_{i,t}$ (where *ACLE* is measured by *ACLEP*, *ACLEN*, *ACLED*) is positive in columns (1)–(3), using each of our measures of legal-only expertise.[26] Thus, the asymmetric timeliness of earnings increases with the degree of legal-only expertise on the audit committee. The coefficient for $ACAFE * Return_{i,t} * D_{i,t}$

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[25] The following control variables are significant in Table 4, Panel A: *ACSIZE*. *LITRISK*, *LEVERAGE*, *SIZE*, $\sigma(CFO)$, and $\sigma(SALES)$. Results for the control variables in Table 4, Panels B and C are similar to those in Table 3.

[26] Results for the control variables in Panel A indicate that *LITRISK*, *R&D*, and *CFO* are negatively, and *SIZE*, *G-INDEX*, and *INOWN* are positively related to *CONMKT*. In Panel B, we find that the asymmetric timeliness of earnings increases with *LEVERAGE*, *SIZE*, and *INOWN*.

TABLE 5

Audit Committee Legal Expertise and Alternative Measures of Financial Reporting Quality

Panel A: Audit Committee Legal Expertise and Market Conservatism

	Dependent Variable: *CONMKT*		
	Legal-Only, Accounting-Only, and Joint Expertise Measured by		
	Proportion (1)	# Experts (2)	Indicator (3)
Legal-Only Expertise	0.667**	0.189**	0.312**
(*ACLEP*, *ACLEN*, *ACLED*)	(2.33)	(2.20)	(1.99)
Accounting-Only Expertise	0.334**	0.101**	0.139**
(*ACAFEP*, *ACAFEN*, *ACAFED*)	(2.04)	(2.25)	(2.29)
Joint Expertise	0.071	0.038	0.077
(*ACJOINTP*, *ACJOINTN*, *ACJOINTD*)	(0.99)	(0.89)	(1.03)
Control Variables	Included	Included	Included
Observations	1,182	1,182	1,182
Adjusted R^2	0.38	0.38	0.38

Panel B: Audit Committee Legal Expertise and Asymmetric Timeliness of Earnings

	Dependent Variable: $E_{i,t}/P_{i,t-3}$		
	Legal-Only, Accounting-Only, and Joint Expertise Measured by		
	Proportion (1)	# Experts (2)	Indicator (3)
$D_{i,t}$	−0.008	−0.035	−0.063
	(−0.40)	(−0.70)	(−0.72)
$Return_{i,t}$	0.034	0.035	0.034
	(0.90)	(0.90)	(0.92)
$Return_{i,t} \times D_{i,t}$	0.027	0.027	0.020
	(1.12)	(1.11)	(1.07)
Legal-Only Expertise	0.555*	0.204*	0.187*
(*ACLEP*, *ACLEN*, *ACLED*)	(1.80)	(1.82)	(1.70)
Legal-Only Expertise × $D_{i,t}$	−0.682*	−0.166*	−0.229*
	(−1.77)	(−1.78)	(−1.70)
Legal-Only Expertise × $Return_{i,t}$	−1.488*	−0.383*	−0.422*
	(−1.90)	(−1.92)	(−1.78)
Legal-Only Expertise × $Return \times D_{i,t}$	1.255**	0.410**	0.380**
	(2.39)	(2.22)	(2.44)
Accounting-Only Expertise	0.228*	0.117*	0.082*
(*ACAFEP*, *ACAFEN*, *ACAFED*)	(1.87)	(1.82)	(1.88)
Accounting-Only Expertise × $D_{i,t}$	−0.397*	−0.101*	−0.103*
	(−1.70)	(−1.74)	(−1.76)
Accounting-Only Expertise × $Return_{i,t}$	−0.673*	−0.202*	−0.166*
	(−1.82)	(−1.78)	(−1.87)
Accounting-Only Expertise × $Return_{i,t} \times D_{i,t}$	0.776**	0.221**	0.182**
	(1.98)	(2.02)	(1.99)

(continued on next page)

TABLE 5 (continued)

	Dependent Variable: $E_{i,t}/P_{i,t-3}$		
	Legal-Only, Accounting-Only, and Joint Expertise Measured by		
	Proportion (1)	# Experts (2)	Indicator (3)
Joint Expertise	0.075	0.044	0.038
(*ACJOINTP*, *ACJOINTN*, *ACJOINTD*)	(0.77)	(0.67)	(0.73)
Joint Expertise × $D_{i,t}$	−0.079	−0.027	−0.033
	(0.65)	(0.66)	(0.59)
Joint Expertise × $Return_{i,t}$	−0.329	−0.077	−0.074
	(−0.77)	(−0.72)	(−0.64)
Joint Expert × $Return_{i,t}$ × $D_{i,t}$	0.226	0.072	0.080
	(−0.93)	(−0.99)	(−0.81)
Control Variables	Included	Included	Included
Observations	1,182	1,182	1,182
Adjusted R^2	0.31	0.31	0.31

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*, ** Statistical significance at the 10 percent and 5 percent levels, respectively.

The estimated models in each panel include, in addition to the variables shown, control variables that are discussed in the text. For brevity, we only report the coefficients for the test variables. Both models are estimated by Generalized Method of Moments. Robust (Huber-White) standard errors are used, based on clustering by firm. Two-tailed t-statistics are reported in parentheses. Other variables are defined in Table 2.

Variable Definitions:
CONMKT = (dependent variable in Panel A) equals (book-to-market ratio minus industry median book-to-market ratio) multiplied by −1;
$E_{i,t}/P_{i,t-3}$ = (dependent variable in Panel B), where $E_{i,t}$ equals cumulative earnings (income before extraordinary items) over the years t, $t-1$, and $t-2$, and $P_{i,t-3}$ equals the market value of equity at the end of the year $t-3$;
$Return_{i,t}$ = buy-and-hold returns, for the period from month 4 of fiscal year $t-2$ up to month 4 of fiscal year t; and
$D_{i,t}$ = 1 if *Return* is negative, and 0 otherwise.

(where *ACAFE* is measured by *ACAFEP*, *ACAFEN*, *ACAFED*) is also positive in columns (1)–(3), using each of our measures of accounting-only expertise. The coefficient for *ACJOINT* * $Return_{i,t}$ * $D_{i,t}$ is not significant.

VI. INTERACTION BETWEEN LEGAL EXPERTISE AND ACCOUNTING EXPERTISE

Collectively, the above results suggest that legal expertise on audit committees is positively associated with financial reporting quality after controlling for the effect of accounting expertise. We now explore interactions in the effects of legal and accounting expertise. We consider two forms of interaction, interaction at the *individual director* level, and interaction at the *audit committee* level.

Interaction at the director level occurs when a director possesses both forms of expertise (*ACJOINT* in our models). As we discussed above, such joint expertise on audit committees is quite infrequent in our sample. Possibly because of this small sample size, we do not find an association between joint expertise held by individual directors and financial reporting quality.

Interaction at the *audit committee* level occurs when the presence of directors with different expertise adds to the quality of financial reporting. There can be an interactive effect arising from the presence of legal-only and accounting-only experts on the audit committee if legal-only experts actively work with accounting-only experts to watch over the quality of financial reporting. Thus, analogous to prior research that has examined whether accounting expertise and other elements of corporate governance work as substitutes or complements in affecting financial reporting quality (e.g., Krishnan and Visvanathan 2008; Carcello et al. 2010), we examine whether legal-only expertise substitutes for or complements accounting-only expertise.

To conduct this analysis, we eliminate firms that have joint experts. For the remaining 1,102 observations, we estimate our models with the *ACLE* and *ACAFE* variables, and include interactions between the *ACLE* and *ACAFE* variables, and all our control variables. We expect the coefficient on the interaction to capture the incremental effect of having both types of expertise on the audit committee, even if different directors possess each form of expertise.

Table 6 presents these results. All columns show, as before, that legal-only expertise and accounting-only expertise variables have significant negative coefficients. In addition, the coefficients for the interactions are also negative and significant, indicating that legal and accounting expertise serve as complements—i.e., together, they produce an enhanced effect on financial reporting quality, over and above the separate effects of the two kinds of experts.[27] The results for the control variables (not tabulated) are similar to those in Table 3.

VII. LEGAL EXPERTISE IN THE PRE- AND POST-SOX ERAS

The two sample years comprising our primary analyses are in the period following SOX. An interesting question is whether the observed association between audit committee legal expertise and financial reporting quality is specific to this sample period, or whether it reflects the behavior of legal experts in general, regardless of other factors. The period following the passage of SOX has been characterized by heightened perceptions of litigation and scrutiny from regulators, and increased director risk (Linck et al. 2009). This could potentially have increased the monitoring activities of directors with legal expertise. Further, the Act and subsequent policy changes have emphasized the role of audit committees in financial reporting by making them more directly responsible for managing relations with the independent auditor, the other important monitor of financial reporting quality. Cohen et al. (2008) document a general decline in accruals-based earnings management in the post-SOX period. One reason for such a decline could be an increased monitoring role played by legal expertise in the post-SOX era.

To examine whether our results are specific to our sample period, we collect data on audit committees and directors for our sample firms for 2001, the year preceding the passage of SOX. Following sample selection procedures similar to those described above for our main sample, we obtain a sample of 597 firms. Table 7, Panel A presents the means for the variables in 2001 (column (1)), means for 2003 for comparison purposes (column (2)), and t-statistics (column (3)) to test for differences between the two means. We observe a significant decrease in discretionary accruals from 2001 to 2003 indicating that, consistent with Cohen et al. (2008), accruals-based earnings management has decreased following SOX.[28] Not surprisingly, we observe an increase in accounting financial expertise on the audit committee in the post-SOX period. More interestingly, however, the incidence of legal-only expertise (although not joint expertise) on audit committees

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[27] Carcello et al. (2010) document substitutability between accounting expertise and other elements of corporate governance. In sensitivity tests, we also included a summary corporate governance variable, i.e., the *G-INDEX* defined in Gompers et al. (2003). The inclusion of *G-INDEX* resulted in the loss of 4 percent of our sample observations, but did not affect our main findings. Both legal and accounting expertise continue to have negative and significant coefficients. *G-INDEX* is insignificant. We also partitioned our sample into high- and low-governance-strength samples based on the median *G-INDEX*. Both legal and accounting expertise have negative and significant coefficients in both samples, but interestingly, the magnitudes of the effects are greater for the low-governance-strength sample.

[28] We see no significant change in *AQ* between 2001 and 2003, possibly because its computation requires five years of past data and, therefore, the measure for the two years has three years of data in common.

TABLE 6

Interactive Effects of Legal and Accounting Expertise on Financial Reporting Quality

	Dependent Variable					
	Accruals Quality (*AQ*)			**Discretionary Accruals (*ADACC*)**		
	Legal-Only and Accounting-Only Expertise Measured by					
	Proportion (1)	**# Experts (2)**	**Indicator (3)**	**Proportion (4)**	**# Experts (5)**	**Indicator (6)**
Legal-Only Expertise	−0.088**	−0.025*	−0.030**	−0.013**	−0.008**	−0.004**
(*ACLEP, ACLEN, ACLED*)	(−2.26)	(−1.87)	(−2.19)	(−2.23)	(−2.19)	(−2.15)
Accounting-Only Expertise	−0.018**	−0.005**	−0.006**	−0.006**	−0.003**	−0.003**
(*ACAFEP, ACAFEN, ACAFED*)	(−2.14)	(−2.33)	(−2.10)	(−2.33)	(−2.11)	(−1.99)
Legal-Only Expertise *	−0.023*	−0.001*	−0.005**	−0.006*	−0.002*	−0.004**
Accounting-Only Expertise	(−1.92)	(−1.93)	(−1.97)	(−1.92)	(−1.90)	(−1.99)
Control Variables	Included	Included	Included	Included	Included	Included
Observations[a]	1,102	1,102	1,102	1,102	1,102	1,102
Adjusted R^2	0.58	0.58	0.58	0.21	0.21	0.22

*, ** Statistical significance at the 10 percent and 5 percent levels (two-tailed tests), respectively.

[a] Firm-year observations with joint experts are excluded in order to focus on the effects of legal-only and accounting-only expertise.

The model includes, in addition to those reported, all variables in Table 3. Variables are defined in Table 2.

For brevity, we only report the coefficients for the test variables. Two-tailed t-statistics are reported in parentheses.

has also increased. Also, firm size, institutional ownership, and board independence are higher, and the proportion of grey directors is lower in 2003, as compared to 2001.

We estimate the model in Table 3 for the 2001 sample. The results (untabulated) are similar to those in Table 3. All three *ACLE* variables, and the three *ACAFE* variables, have significant negative coefficients using both *AQ* and *ADACC* as dependent variables. The joint expertise variables are not significant. Thus, both legal-only and accounting-only expertise are positively associated with financial reporting quality in the pre-SOX year.

Table 7, Panel B, compares the pre- and post-SOX years by presenting the models for a pooled sample for the years 2001, 2003, and 2005. We augment the model in Table 3 by adding (1) *POSTSOX*, an indicator variable taking the value 1 for observations for the years 2003 and 2005, and 0 otherwise, and (2) the interactions *POSTSOX* * *ACLE*, *POSTSOX* * *ACAFE*, and *POSTSOX* * *ACJOINT*, using the three variants for *ACLE*, *ACAFE*, and *ACJOINT*. The coefficients on *POSTSOX*, capturing the change in financial reporting quality in the post-SOX years compared with 2001, for firm-year observations with no legal-only, or accounting-only or joint experts, are significant and negative in all columns, again consistent with Cohen et al. (2008). The results for the control variables (not tabulated) are similar to those in Table 3.

The interactions capture the differential effect of the different kinds of expertise in the post-SOX years, relative to 2001. The interactions of all three *ACLE* measures with *POSTSOX* have negative significant coefficients, indicating that while legal-only expertise has positive effects on financial reporting quality in both the pre-SOX and post-SOX periods, the effect is greater in the latter period, possibly due to the heightened litigation-awareness following the high-profile financial failures prior to the passage of SOX. We see a similar pattern for accounting-only expertise: all three *ACAFE* measures and their interactions with *POSTSOX* have negative significant

TABLE 7

Legal Expertise and Financial Reporting Quality
Comparison with a Pre-SOX Year

Panel A: Pre-SOX Descriptive Statistics and Comparisons between 2001 and 2003

Variable	Mean (2001) (1)	Mean (2003) (2)	t-test for Difference in Means (3)
AQ	0.062	0.054	1.60
ADACC	0.066	0.042	5.75***
ACLEP (Proportion)	0.041	0.049	−1.88*
ACLEN (#)	0.192	0.220	−1.92*
ACLED (Indicator)	0.201	0.250	−1.99**
ACAFEP (%)	0.142	0.232	−6.99***
ACAFEN (#)	0.522	0.921	−7.72***
ACAFED (Indicator)	0.444	0.664	−8.02***
ACJOINTP (%)	0.018	0.024	−0.99
ACJOINTN (#)	0.058	0.061	−1.22
ACJOINTD (Indicator)	0.052	0.071	−1.80*
NACLE	0.070	0.071	−0.51
ACTENURE	1.744	1.732	0.27
ACSIZE	1.312	1.323	−1.12
INDEP	0.652	0.690	−4.88***
GREY	0.144	0.122	2.67***
LITRISK	0.208	0.199	0.18
LEVERAGE	0.222	0.212	0.99
INOWN (%)	66.566	68.574	−2.01**
SIZE	7.960	8.152	−2.32**
σ(*CFO*)	0.060	0.059	0.20
σ(*SALES*)	0.222	0.220	0.50
OPERCYCLE	4.672	4.670	0.05
NEGEARN	0.133	0.142	−0.73
Observations	597	591	

Panel B: Regression Models

	Dependent Variable					
	Accruals Quality (*AQ*)			Discretionary Accruals (*ADACC*)		
	Legal Only, Accounting-Only, and Joint Expertise Measured by					
	Proportion (1)	# Experts (2)	Indicator (3)	Proportion (4)	# Experts (5)	Indicator (6)
POSTSOX	−0.005*	−0.005*	−0.005*	−0.011**	−0.011**	−0.011**
	(−1.84)	(−1.88)	(−1.89)	(−2.49)	(−2.50)	(−2.48)
Legal-Only Expertise	−0.055**	−0.018**	−0.022**	−0.007**	−0.003**	−0.002**
(*ACLEP, ACLEN, ACLED*)	(−2.33)	(−2.29)	(−2.31)	(−2.11)	(−2.20)	(−2.17)
POSTSOX * Legal-Only	−0.014*	−0.004*	−0.005*	−0.003**	−0.001**	−0.001**
Expertise	(−1.93)	(−1.88)	(−1.92)	(−2.03)	(−1.99)	(−2.06)

(continued on next page)

TABLE 7 (continued)

	Dependent Variable					
	Accruals Quality (*AQ*)			Discretionary Accruals (*ADACC*)		
	Legal Only, Accounting-Only, and Joint Expertise Measured by					
	Proportion (1)	# Experts (2)	Indicator (3)	Proportion (4)	# Experts (5)	Indicator (6)
Accounting-Only Expertise (*ACAFEP, ACAFEN, ACAFED*)	−0.007** (−2.11)	−0.002** (−2.02)	−0.003** (−2.21)	−0.004** (−2.20)	−0.002** (−2.31)	−0.002** (−2.22)
POSTSOX * Accounting-Only Expertise	−0.002* (−1.88)	−0.001* (−1.90)	−0.002* (−1.93)	−0.001** (−2.03)	−0.001* (−1.89)	−0.001** (−1.97)
Joint Expertise (*ACJOINTP, ACJOINTN, ACJOINTD*)	−0.006 (−1.04)	−0.003 (−0.79)	−0.003 (−0.85)	−0.001 (−0.74)	−0.001 (−0.74)	−0.000 (−0.83)
POSTSOX * Joint Expertise	−0.002 (−0.98)	−0.001 (−0.74)	−0.001 (−0.88)	−0.000 (−0.44)	−0.000 (−0.29)	−0.000 (−0.42)
Control Variables	Included	Included	Included	Included	Included	Included
Observations	1,754	1,754	1,754	1,754	1,754	1,754
Adjusted R^2	0.44	0.44	0.44	0.25	0.25	0.25

*, **, *** Statistical significance at the 10 percent, 5 percent, and 1 percent levels (two-tailed tests), respectively.
The model includes, in addition to those reported, all variables in Table 3. Two-tailed t-statistics are reported in parentheses. Other variables are defined in Table 2.
Variable Definition:
POSTSOX = 1 if the observation pertains to 2003 or 2005, and 0 otherwise.

coefficients. However, joint expertise has no significant effect in either the pre-SOX or the post-SOX periods.

VIII. CONCLUSIONS

In the aftermath of the collapse of Enron Corporation and the demise of Andersen, an important concern is whether monitoring by corporate audit committees can ensure good-quality financial reporting. Can the appointment of professional experts to audit committees help in enhancing financial reporting quality? Much attention has been given to accounting expertise because accounting experts have the direct knowledge to monitor financial reporting. However, there has been a significant increase in the number of lawyers appointed to corporate boards in recent years. We examine whether audit committee legal expertise is associated with corporate financial reporting quality. Because legal experts are alert to litigation risk and financial reporting can be associated with litigation risk, it is likely that legal experts on audit committees provide an additional layer to the monitoring of financial reporting.

We find that directors with legal backgrounds who serve on audit committees contribute positively to financial reporting quality, as measured by accruals quality and discretionary accruals, after controlling for the positive effect of accounting expertise. A very small percentage of directors in our sample have both accounting and legal expertise, and, possibly because of their small number, we do not find a significant positive association between joint expertise and financial reporting quality. However, audit committees with separate legal and accounting experts exhibit an incremental positive effect on reporting quality. Thus, legal and accounting expertise appear to play complementary roles in monitoring financial reporting. Interestingly, the magnitude of the positive effect of legal expertise on financial reporting quality is larger than that of accounting expertise. One explanation for this result is that the legal experts are fewer in number and are voluntarily appointed by firms, presumably because of the benefits they bring to the audit committee. By contrast, the accounting experts are much more prevalent in the sample and many firms have more than one such expert. Consequently, the marginal benefit of additional accounting expertise seems to be lower than that of additional legal expertise.

Our findings complement prior research, providing new evidence on the role of professional expertise on audit committees. Current policy emphasis has been on the monitoring role of audit committees and, in particular, on the presence of financial experts. The overall goal of these polices and of the Sarbanes-Oxley Act is to enhance the quality of financial reporting, engendering greater investor confidence. While Section 307 of the Act mandates clearer responsibilities for corporate lawyers in responding to discovery of misdoings, it does not require the appointment of lawyers to, or address their role on, corporate audit committees. Linck et al. (2009) speculate that the increased regulation and litigation risks are likely factors behind the increase in the appointment of lawyer-directors. Regardless of the reason for this increase, we find that a consequence of the increase in legal expertise on audit committees could be an improvement in financial reporting quality.

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The Effect of Using the Internal Audit Function as a Management Training Ground on the External Auditor's Reliance Decision

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ABSTRACT: This study examines how using the internal audit function (IAF) as a management training ground (MTG) affects external audit fees and the external auditors' perceptions of the IAF. Over half of all companies that have an IAF specifically hire internal auditors with the purpose of rotating them into management positions (or cycle current employees into the IAF for a short stint before promoting them into management positions). Using archival data, we find that external auditors charge higher fees to companies that use the IAF as a MTG. Using an experiment, we provide evidence as to why fees are higher. Specifically, we find that external auditors perceive internal auditors employed in an IAF used as a MTG to be less objective but not less competent than internal auditors employed in an IAF not used as a MTG. These results have important implications for the many companies that use their IAF as a MTG.

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I. INTRODUCTION

The practice of using the internal audit function (IAF) as a management training ground (MTG)—defined as a company targeting internal auditors for hire into management positions outside of the IAF—is a common practice in the United States. Abbott et al. (2010) report in a survey of 134 internal auditors from *Fortune* 1000 firms that 65 percent of respondents say they use their IAF as a MTG. Although this practice is widespread and advocated as the future of internal auditing (Barrier 2001), very little research has investigated the impact of this prevalent practice.

The purpose of this study is to begin to fill this void by examining two issues. First, we examine whether the use of the IAF as a MTG translates into external audit fee effects. If using the IAF as a MTG impacts perceived internal audit effectiveness (at least in terms of financial reporting effectiveness), then external auditors will likely charge different fees to companies that choose to employ this practice. Second, we use an experiment to investigate potential underlying causes for any difference in external audit fees related to the use of the IAF as a MTG. We specifically consider whether external auditors judge internal auditors to be less objective or competent or anticipate that internal auditors will exercise less due care when the IAF is used as a MTG.

To the extent internal auditors are judged to be of high competence and objectivity, and to demonstrate due care, external auditing standards permit and at times encourage external auditors to reduce the amount of work they conduct by relying on the work of internal auditors (AICPA 1990; PCAOB 2007; IFAC 2009). Given that standards require external auditors to perform these evaluations, external auditors can serve as effective evaluators of the competence and objectivity of internal auditors. Increased reliance on the work of the IAF can then translate into lower external audit fees if the external auditor passes cost savings onto the client (e.g., Felix et al. 2001; Gramling et al. 2004; Prawitt et al. 2011a).

Importantly, we focus on whether the MTG setting will impact the external auditor's *perceptions* of the IAF and not the IAF's actual performance. The external auditors' perceptions likely determine the extent to which the auditor relies on the IAF to reduce fees. To predict how external auditors will evaluate internal auditors employed in a MTG, we rely on attribution theory. Specifically, we predict that external auditors will perceive the work performed by internal auditors in a MTG to be biased because of the internal auditors' incentives to bias their work to look good for management (e.g., please management to secure a promotion). This will cause external auditors to perceive internal auditors employed in an IAF used as a MTG to be less objective, and they will consequently rely less on internal auditors' work and charge higher audit fees. Although we also investigate whether the MTG setting impacts external auditors' perceptions of internal auditor competence and due professional care, we are not able to make directional predictions for these perceptions because of competing explanations.

In order to test our hypotheses, we employ both an archival analysis and a behavioral experiment using practicing external auditors. By using these two complementary empirical approaches, we are able to take advantage of the benefit of each methodology (see Libby et al. 2002; Waller and Zimbelman 2003). We use an archival approach to examine the impact of using the IAF as a MTG on external audit fees. We conduct an experiment to shed additional light on external auditors' perceptions of IAF objectivity, competence, and due care.

In our archival analysis, we examine benchmarking data collected by the Institute of Internal Auditors (IIA) from 2000 to 2005 to test whether there are observable external audit fee effects associated with using the IAF as a MTG. This database contains 350 usable firm-year observations from 162 companies. We use unexpected external audit fees to examine the impact of using the IAF as a MTG on the external auditor's reliance on the IAF. We measure unexpected external audit fees as the residual of a regression that uses known determinants of external audit fees for the entire Compustat and Audit Analytics databases (e.g., DeFond et al. 2002; Prawitt et al. 2011a). We find that the use of the IAF as a MTG is positively associated with external audit fees.

In our experiment, professional auditors make IAF-related judgments for a client that uses the IAF to monitor controls. We manipulate MTG at three levels: (1) IAF is not used as a MTG, (2) IAF is used as a MTG for all IAF members, and (3) IAF is used as a MTG for all IAF staff except the chief audit executive.[1] Our measures include external auditors' beliefs about the competence, objectivity, and due professional care of the internal auditors.

Results from our experiment show that, consistent with our expectations, external auditors perceive internal auditors employed in an IAF used as a MTG to be less objective than internal auditors not employed in an IAF used as a MTG. We further find that external auditors do not perceive internal auditors to be less competent or that internal auditors will exercise less due care when they are in a MTG setting. These results complement our archival analysis, and the combined results suggest that external audit fees are higher if a company uses the IAF as a MTG and that one reason for the higher fees could be due to external auditors' concerns with MTG internal auditors' objectivity.

Our research makes two primary contributions to the literature. First, we show with archival data that using the IAF as a MTG is associated with higher external audit fees, especially when it involves using just the chief audit executive position as a MTG. Second, we show experimentally that, when the IAF is used as a MTG, external auditors perceive that internal auditors are less objective. Given the extensive use of IAFs as MTGs, these findings should be useful for internal auditors, managers, and standard-setters in recognizing and weighing the potential costs of using the IAF as a MTG.

II. PRIOR LITERATURE AND HYPOTHESES

The practice of using the IAF as a MTG has existed for some time. Survey research conducted in 1990 suggests that at that time half the companies surveyed used their IAF as a MTG (Oxner and Oxner 2006). Companies generally take one of two different approaches to using the IAF as a MTG (Goodwin and Yeo 2001). One approach is to hire new graduates (or senior-level employees from other organizations) into internal auditing with the promise that they will be promoted into line management within a few years (Oxner and Kusel 1996). The other approach is to assign existing employees to work in the IAF for a specified time before being cycled back into management—usually into a higher position than they had when they entered the IAF (Chadwick 1995). Under either approach, all internal auditing positions can be used as a MTG—even the chief audit executive position (PricewaterhouseCoopers 2000).

Due to the extensive history of using the IAF as a MTG, the professional literature has debated the positive and negative aspects of this practice. This literature suggests that the benefits include being able "to train versatile, well-rounded senior managers" (Chadwick 1995, 63), giving managers exposure to all areas of the company (Reeve 1990; Sawyer 1996; Pickett 1997), providing time for management to evaluate internal auditors' ability (Galloway 1995), and increasing managers' understanding of internal controls (Ridley 1997). Some go so far as to suggest that high turnover due to using the IAF as a MTG is the future of internal auditing (Barrier 2001). Disadvantages of using the IAF as a MTG include reduced independence of internal auditors (especially when senior internal audit personnel are hired out of the IAF into management positions), reduced incentives for internal auditors to enhance the quality of the IAF, potentially less time to develop audit skills, and a reduced willingness of internal auditors to take strong positions when those positions disagree with management—especially if the auditee will become the internal auditor's supervisor when the internal auditor is transferred out of the IAF (Wood and Wilson 1989; Chadwick 1995).

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[1] We find in the descriptive statistics of our archival analysis that using the IAF as a MTG to promote only staff or both staff and the chief audit executive are the most common scenarios when the IAF is used as a MTG.

Although the professional literature enumerates strengths and weaknesses of using the IAF as a MTG, it does not provide empirical evidence of these effects.[2] We examine whether using the IAF as a MTG affects external audit fees, and then examine reasons why external audit fees could be affected. Before we discuss each of these effects, we discuss the role of the IAF and external auditing standards governing external auditor reliance on the IAF.

IAF Roles and External Audit Guidance on Relying on the IAF

Previous research provides evidence of the impact of internal audits on financial reporting. For instance, internal auditing has been shown to influence risk assessments (Sarens and De Beelde 2006; Asare et al. 2008), safeguarding of assets (Beasley et al. 2000; Coram et al. 2008), financial statement evaluation (Prawitt et al. 2009; Prawitt et al. 2011b), internal control evaluation (Lin et al. 2011), and organization monitoring (COSO 2009). This research provides compelling evidence that internal auditors perform tasks relevant to the financial reporting process. Internal auditors also perform other tasks that are not directly relevant to the financial reporting process. According to the definition of internal auditing put forth by the IIA:

> Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes. (IIA 2010, para. 2)

Based on this definition, it is clear that internal auditors can be responsible for any number of activities. Although they can provide many types of services, external auditors are only concerned with IAF activities that impact the external audit. According to SAS No. 65 (AICPA 1990), the IAF can influence the external audit by affecting the external auditor's (1) understanding of relevant controls, (2) risk assessments, and (3) substantive procedures. Once an auditor discerns that an IAF activity would affect external audit effectiveness and efficiency, the auditor should decide the extent of reliance on the IAF by evaluating internal auditors' objectivity, competence, and due care (AICPA 1990; PCAOB 2007; IFAC 2009). Based on a satisfactory evaluation of these characteristics, the evaluation of the IAF can affect the external auditors' reliance on IAF work (AICPA 1990; PCAOB 2007). An extensive body of literature finds that external auditors do rely on the IAF and use the factors suggested by SAS No. 65 (and reaffirmed by AS 5 [PCAOB 2007]) in making their decisions (e.g., Schneider 1984; see Gramling et al. [2004] for a review of this literature).

The Effects of Using the IAF as a MTG on the External Audit Fee

To derive predictions of how external auditors evaluate internal auditors who work in a MTG, we turn to attribution theory from the psychology literature (e.g., Heider 1958; Jones and Davis 1966). Attribution theory seeks to explain how individuals perceive others and make sense of their behavior (Taylor 1998). As explained by Weiner (1986, 292), "the guiding principle of attribution theory is that people search for understanding, seeking to discover why an event has occurred." For example, when evaluating another person, the evaluator considers situational factors that potentially explain the evaluatee's behavior (Fein et al. 1990; Fein 1996; Vonk 1998). Further, DeZoort et al. (2001) find that external auditor perceptions of internal auditor objectivity are influenced by the makeup of internal auditor pay schemes (i.e., availability of a bonus) and function (e.g., whether internal auditors chiefly consult for management). That is, external auditors attribute the favorable performance of work by the IAF to the desire to achieve a bonus or to impress management rather than to the performance of objective, independent work.

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[2] We are aware of a single exploratory academic study that examines the use of the IAF as a MTG. Goodwin and Yeo (2001) conducted a survey of chief audit executives in Singapore and found that IAFs are used extensively as MTGs in Singapore but the results are mixed as to whether the practice impairs or improves the internal auditors' work.

Applied to our setting, attribution theory suggests that, when external auditors evaluate the IAF, they will be less willing to rely on the work of the IAF if they perceive that the results of the IAF are influenced by situational factors that could cause internal auditors to bias their results. It is important to note that this theory does not require internal auditors to actually be biased, but rather the theory only requires external auditors to perceive the internal auditors to be biased. To develop our predictions, we evaluate the reasons that internal auditors employed in an IAF used as a MTG could be perceived by external auditors as being potentially biased.

There are several reasons that external auditors are likely to perceive differences in internal auditors' objectivity when the IAF is used as a MTG compared to when it is not. Internal auditors employed in a MTG have an incentive to seek promotion into management positions because such positions are usually associated with higher pay and higher status than internal audit positions. Because management decides which internal auditors will be promoted, the internal auditors have an incentive to please management. This incentive to please management could cause internal auditors in a MTG to be biased, either intentionally or unintentionally, to favor management.[3] Furthermore, external auditors could perceive MTG internal auditors to be less objective if they believe that the internal auditors selected their current employer because of the promotion possibilities rather than to diligently perform IAF tasks. Similarly, they could perceive that MTG internal auditors are less objective if they were hired out of another part of the client's operations and thus have personal ties to management before entering the IAF. These arguments all suggest that external auditors will perceive internal auditors employed in a MTG to be less objective than internal auditors not employed in a MTG.

To the extent external auditors perceive internal auditors employed in a MTG to be less objective, they will be less likely to rely on the work of the IAF (AICPA 1990; PCAOB 2007; IFAC 2009), and thus charge a higher audit fee when the IAF is used as a MTG. Previous research provides evidence that when external auditors rely to a greater extent on the work of the IAF, external audit fees are reduced (Felix et al. 2001; Prawitt et al. 2011a). Survey evidence collected by Felix et al. (1998) suggests that this is the case because external auditors rely on the work of an IAF to lower costs and that external auditors typically do not obtain a higher realization rate as a result of the cost savings.[4] We therefore predict:

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[3] It is not the purpose of this study to test whether internal auditors are in fact biased. We view this as an important research question and encourage future researchers to address it. Furthermore, if internal auditors are performing other work (e.g., operational audits) then management may want the internal auditors to discover and report problems. If this were the case, then internal auditors would please management more when the internal auditors brought up issues. However, we focus on the IAF as it relates to financial reporting and proceed under the assumption that if management were to take aggressive accounting positions, then internal auditors would displease management (and thus decrease the likelihood of promotion) if they point out potential financial problems. Even if this assumption does not hold and management or the audit committee prefers that internal auditors detect and report erroneous accounting issues, external auditors may still perceive that internal auditors may try to please management by not pointing out erroneous accounting.

[4] External auditors would be unlikely to pass cost savings on to clients if the market for the external audit were not competitive. Doogar and Easley (1998) and the GAO (GAO 2003, 2008) provide evidence that the market for audits of publicly traded companies is competitive; thus, it is highly likely that at least some cost savings realized by external auditors due to reliance on the IAF are passed on to clients in the form of lower external audit fees. However, if this is not the case, then it biases against our finding results.

H1: External audit fees of companies that use the IAF as a MTG will be higher than the external audit fees of companies that do not use the IAF as a MTG.

External Auditors' Evaluations of the IAF used as a MTG

If H1 holds using archival data, then it will provide evidence of a positive association between the use of the IAF as a MTG and external audit fees—a strength of the archival method (Waller and Zimbelman 2003). In order to provide additional support for H1, and to provide evidence of why we might observe an association between using the IAF as a MTG and external audit fees, we employ an experiment (Libby et al. 2002; Waller and Zimbelman 2003). As previously mentioned, external auditors must evaluate the objectivity, competence, and, under international standards (ISA 610), the due care of internal auditors when determining the extent to rely on internal auditors' work (AICPA 1990; PCAOB 2007; IFAC 2009). We therefore expect that to the extent there is an external audit fee effect, it is caused by external auditors' differential perceptions of internal auditors' objectivity, competence, or due care, when the IAF is used as a MTG as opposed to not used as a MTG.

As previously discussed, attribution theory suggests that external auditors are likely to perceive internal auditors employed in an IAF used as a MTG to be less objective than internal auditors employed in an IAF that is not used as a MTG. This forms the basis of our second hypothesis:

H2: External auditors will assess the objectivity of internal auditors to be lower if the IAF is used as a MTG than if it is not used as a MTG.

There are competing *ex ante* factors impacting how external auditors will perceive the competence of internal auditors employed in a MTG. Given the competing factors, attribution theory does not provide a clear basis for predicting which differences will be more or less important in explaining how external auditors will perceive internal auditors' competence and exercise of due professional care when the IAF is used as a MTG. We therefore discuss the competing factors and then test for differences with a non-directional research question.

There are several reasons external auditors could perceive MTG internal auditors to be more competent or to exercise more due care than non-MTG internal auditors. First, external auditors could believe individuals with more competence or drive will self-select to IAFs used as a MTG in order to obtain high-paying management positions. Second, external auditors could believe that management will target highly competent and driven individuals for the IAF in MTG settings because these internal auditors will soon help manage the company. Third, MTG internal auditors could have an incentive to exert more effort in an attempt to impress management and increase the likelihood of promotion from the IAF to a management position.

There are competing reasons suggesting that external auditors will perceive MTG internal auditors to be less competent or will expect MTG internal auditors to exercise less due care than non-MTG internal auditors. First, external auditors could view IAF positions as stepping stones into managerial positions at the company. If this is the case, they would not expect MTG internal auditors to focus on effectively performing IAF tasks, as they could be more concerned about future management responsibilities. Second, external auditors could perceive MTG internal auditors to be less competent because the internal auditors in a MTG IAF have an incentive to focus on developing management competencies rather than internal audit competencies, and, therefore, might not be as competent at performing IAF tasks or concerned about putting in the effort to develop expertise in internal controls.

Given these competing explanations, we test whether external auditors perceive MTG internal auditors to be more or less competent than internal auditors in a non-MTG setting. We also investigate whether MTG internal auditors are perceived to demonstrate more or less due care than non-MTG internal auditors.

RQ: Do external auditors assess the competence and due care of internal auditors to be different if the IAF is used as a MTG than if it is not used as a MTG?

III. ARCHIVAL METHOD AND RESULTS

Sample and Data

To test our expectations, we examine data from GAIN (Global Audit Information Network) benchmarking surveys conducted by the IIA from 2000 to 2005. The IIA conducts an annual worldwide online survey of IAFs for the purpose of providing benchmarking data. The survey covers various aspects of internal audit practice, including: general information about the participating organizations; internal auditing costs and staffing; chief audit executives; and successful internal auditing practices. The survey has changed slightly from year to year, but all of the questions included in our study were unchanged from 2000 to 2005.

All IIA member organizations are encouraged to participate in the survey, which results in a database that includes a wide range of institutions (publicly traded and private companies, educational institutions, governmental institutions, etc.). We restrict our analysis to publicly traded U.S. companies that have data available on Compustat, Audit Analytics, and Risk Metrics. We are able to match 789 GAIN data firm-years with Compustat and Risk Metrics data during the period of our study.[5] We eliminate 207 firm-year responses because they do not have the requisite data available to estimate the models. Finally, we delete firm-years because of measurement issues for our variable of interest—the use of the IAF as a MTG. The IIA survey asked respondents if they used staff and the chief audit executive positions as a MTG and gave them four options from which to choose. Options included using staff and chief audit executive positions as rotational, career, rotational moving to career, and career moving to rotational. Because we could not discern the degree of "movement" for the two latter categories, we deleted these firm-year responses from our sample, resulting in a final sample of 350 firm-year observations from 162 different companies.[6]

Audit Fee Model Specification for Computation of Unexpected Audit Fees

To test H1, we estimate a cross-sectional regression model based on prior audit fee research to generate unexpected audit fees (e.g., DeFond et al. 2002; Hay et al. 2006; Prawitt et al. 2011a).[7]

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[5] The GAIN database omits firm identifiers. Thus, we matched, with permission, GAIN data to Compustat based on self-reported total assets, total revenues, and operating industry from the survey.

[6] We believe deletion is the best option from a theoretical level. Our theory depends on the external auditors' perception of the IAF. External auditors are unlikely to be able to make clear evaluations of such an IAF and therefore this would add noise to our analysis.

[7] Using total audit fees would create a significant statistical power issue due to the need to control for other known determinants of audit fees. In estimating the unexpected external audit fee we include 21 independent variables together with industry and year indicators. Because we have 350 observations with internal audit data, including such a large number of control variables in our internal audit tests would result in greatly diminished power to detect a relation between the dependent and independent variables. Hence, we control for known determinants of audit fees, and examine whether the residual from that regression is significantly associated with the use of the IAF as a MTG.

Our measure of unexpected audit fees is the residual from the following regression (see Appendix A for variable definitions):

$$\begin{aligned} EAFees = {} & \beta_0 + \beta_1 Assets + \beta_2 IRisk + \beta_3 Complexity + \beta_4 Leverage + \beta_5 ROA \\ & + \beta_6 Loss + \beta_7 NonAuditFees + \beta_8 BigN + \beta_9 AuditSpecialist + \beta_{10} Andersen \\ & + \beta_{11} YearEnd + \beta_{12} CurrentRatio + \beta_{13} Acquisition + \beta_{14} AuditorChange \\ & + \beta_{15} GoingConcern + \beta_{16} ForeignSales + \beta_{17} ICWeakness + \beta_{18} Restate \\ & + \beta_{19} AuditLag + \beta_{20} AuditTenure + (\beta_{21}\text{--}\beta_{25}) YearDummies \\ & + (\beta_{26}\text{--}\beta_{71}) IndustryDummies + \varepsilon. \end{aligned} \quad (1)$$

We include common variables from recent research to explain the dependent variable; external audit fees (see the meta-analysis by Hay et al. [2006] for a discussion of many of these individual variables). We include *Assets* because it has been consistently found that larger companies charge higher external audit fees. We include a measure of inherent risk (*IRisk*), complexity (*Complexity*), and foreign operations (*ForeignSales*) because external auditors charge more when companies are more risky to audit and their operations are more complex or overseas. External auditors charge more when companies have high leverage; thus, we include the variable *Leverage*. We include the variables *ROA* and *Loss* because external audit fees are higher for companies that perform poorly. We include *NonAuditFees* and *BigN* because prior research has shown mixed results regarding the impact of nonaudit fees on audit fees (e.g., Palmrose 1986a; Whisenant et al. 2003) and Big N audit firms generally charge higher fees (e.g., Palmrose 1986b). Companies with non-December 31 year-ends generally receive fee discounts (*YearEnd*). Firms with industry specialist auditors (*AuditSpecialist*) likely pay higher fees, while companies switching external auditors (*AuditorChange*) have been found to pay lower fees. We include *AuditTenure* based on prior research, but we do not make a prediction about the sign on *AuditTenure*, as previous research results are mixed (Hay et al. 2006). We include *AuditLag* as a proxy for potential problems in the audit that require significant audit work and thus greater fees. Hay et al. (2006) and Ferguson et al. (2003) discuss these or similar variables.

We also expect a positive relation between audit fees and firms involved in acquisition activities (*Acquisition*) (Firth 2002) and firms that receive going-concern opinions (*GoingConcern*) (Ferguson et al. 2003; Geiger and Rama 2003). We include *Andersen* to control for possible pricing effects caused by the demise of Arthur Andersen (e.g., Kealey et al. 2007). Furthermore, we control for the *CurrentRatio* because liquidity can be negatively associated with audit fees, although this is not always the case (see, e.g., Abbott et al. 2003; Kealey et al. 2007). Following Hoitash et al. (2008) and Feldman et al. (2009), we include *ICWeakness* and *Restate* because companies with internal control problems or other reporting problems cause the external audit firm to face greater legal liability and are more difficult to audit, and thus we expect them to be associated with higher audit fees. Finally, consistent with Chang et al. (2008), we include industry and year indicator variables.

We run this model on all firms that are included in both the Compustat and Audit Analytics database for the years in our sample. The residual from this regression is our measure of unexpected audit fees. The residual represents the portion of the external audit fee that cannot be explained by the presence of the other variables included in the model.

Unexpected Audit Fee Model Specification for Testing IAF Characteristics

Using the unexpected audit fee from Equation (1), we estimate the following two cross-sectional regression models (see Appendix A for variable descriptions).

$$UnexpectedFees = \beta_0 + \beta_1 MTG + \beta_2 TimeEA + \beta_3 TimeF + \beta_4 IAQuality + \beta_5 Turnover + \beta_6 ACExpert + \beta_7 ACIndep + \beta_8 ACSize + \beta_9 Gindex + \varepsilon. \quad (2)$$

$$UnexpectedFees = \beta_0 + \beta_1 MTGCAE + \beta_2 MTGEmp + \beta_3 MTGBoth + \beta_4 TimeEA + \beta_5 TimeF + \beta_6 IAQuality + \beta_7 Turnover + \beta_8 ACExpert + \beta_9 ACIndep + \beta_{10} ACSize + \beta_{11} Gindex + \varepsilon. \quad (3)$$

To test H1, we use Equation (2) and include *MTG* in the regression. A positive coefficient on the *MTG* variable would suggest that, consistent with H1, using the IAF as a MTG increases unexpected external audit fees. We then provide an additional test to see whether the cost savings differ based on what internal audit positions are used as a MTG. Although not hypothesized, it is possible that external auditors differentially rely on the IAF depending upon which internal auditing positions are used as a MTG. Multiple different positions within the IAF can be used as a MTG. Of particular relevance is the choice companies make to use the chief audit executive position as a MTG rather than as a permanent career position. Given the ability of the chief audit executive to impact all work performed and reported by internal auditors, it stands to reason that an external auditor's beliefs about the IAF's objectivity, competence, and due care would be particularly impacted if the chief audit executive position is used as a MTG. We therefore test whether the effects are greater if the chief audit executive position is used as a MTG (using Equation (3)). We include *MTGCAE*, *MTGEmp*, and *MTGBoth* instead of *MTG* and test whether the coefficient on each of these variables differs from the others.

In Equation (2) and Equation (3), we include eight control variables (these control variables should be considered additional control variables to those included in computing *UnexpectedFees*).[8] We include two variables, *TimeEA* (percentage of time the internal auditors spend helping the external auditors) and *TimeF* (percentage of time the internal auditors spend on financial-related matters) to measure the distinct ways in which the IAF can contribute to a reduction in the external auditor's work (Prawitt et al. 2011a).[9] There are at least two ways that the internal auditors' work can apply to the financial statement audit: (1) if they provide direct assistance to the external auditor in completing the external audit, and (2) if they perform activities during the year upon which the external auditor can rely (AICPA 1990). Consistent with Prawitt et al. (2011a), we expect to observe a negative relation between both variables and unexpected audit fees.

We include *IAQuality* to control for any differences (not attributable to differences in MTG) in the overall quality between IAFs. This variable is a composite score measuring the quality of the IAF and can range from a score from 0 (lowest quality) to 6 (highest quality). The score is formed by assigning a value of 1 to scores above the median of the entire sample for *Experience*,

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[8] We include these variables in the second stage because they are unavailable for a large percentage of the observations in the first stage. Specifically, we gather the audit committee data from the GAIN survey, which is restricted to the same firms for which we have internal audit data.

[9] As a sensitivity analysis, we examine whether MTG and non-MTG internal auditors differ in other activities they perform. The IIA GAIN database contains information about the following activities: operational auditing, IT auditing, fraud investigations, special management requests, auditor administration, supporting company wide re-engineering efforts/quality efforts/self-assessment programs, providing internal control programs, training, absences, and travel. A comparison of MTG to non-MTG IAFs reveals that the only services that are statistically different are time spent on financial activities (*TimeF*) and time spent on operational activities. MTG auditors provide more *TimeF* (32.2 for MTG compared to 27.0 for non-MTG) and more operational auditing (24.0 for MTG compared to 18.4 for non-MTG). We already control for differences in *TimeF* in the model. When we add a similar control for operational auditing, the results are qualitatively similar to those reported and the time spent on operations variable is not significant. For purposes of this paper, "qualitatively similar" means that the results are in the same direction and the same level of statistical significance (i.e., moderate significance p-value < 0.10, statistically significant p-value < 0.05).

Certification, *CAEAC*, *Training*, and *IASize*, summing the results of these characteristics together (see Appendix A for a description of these variables). We expect to observe a negative coefficient on this variable. We include the variable *Turnover* to rule out an alternative explanation that audit fees are higher for companies that use the IAF as a MTG because the internal auditors are less experienced from always cycling out of the IAF and this drives the result instead of the use of the IAF as a MTG.[10] We include three measures of the effectiveness of the audit committee. Following Krishnan (2005), we include measures to control for audit committee quality on the dimensions of size (*ACSize*), independence (*ACIndep*), and expertise (*ACExpert*). We expect these variables to be negatively associated with unexpected external audit fees.

Gindex is formed by giving an organization a point for each takeover defense or lack of shareholder rights for 24 different provisions, which pertain to such things as strategies for delaying hostile takeovers, voting rights, protection for directors/officers, and state laws. Higher *Gindex* values suggest that more provisions are in place to make it difficult to oust the current management, giving management greater power over the organization, which suggests lower corporate governance quality. Having higher power puts managers in a great position to manipulate accounting results or to be unwilling to negotiate with auditors. Therefore, we expect to observe a positive coefficient on *Gindex*.

Finally, a company's choice of whether to use the IAF as a MTG is likely to be sticky from one year to the next, which could introduce a correlation in observations when a single firm is represented in the sample across multiple years. To address this issue, we report clustered-adjusted standard errors for all regressions.

Results

Table 1 presents descriptive statistics for the archival data. Panel A separates companies based on whether they use the IAF as a MTG and provides descriptive statistics for each different arrangement. Parametric univariate comparisons show that companies that use the IAF as a MTG do not differ from those firms that do not in terms of size, complexity, leverage, ROA, likelihood of experiencing a loss, and corporate governance measures of audit committee expertise, independence, or size. The only significant parametric univariate differences are in terms of inherent risk, where firms that use the IAF as a MTG have higher inherent risk than firms that do not use the IAF as a MTG; internal audit quality, where companies that do not use their IAF as a MTG are of higher quality; and turnover, where companies that use their IAF as a MTG have higher turnover. Nonparametric statistics are similar except that size and ROA are also statistically different between the use and non-use of the IAF as a MTG (median values of assets and ROA are higher if the IAF is used as a MTG).

Table 1, Panel B presents a correlation matrix of the variables included in the models. The simple Spearman (Pearson) correlations suggest that *MTG* is significantly negatively related to *UnexpectedFees* ($p < 0.05$). This evidence is consistent with H1. Breaking *MTG* down into *MTGCAE*, *MTGEmp*, and *MTGBoth* shows that only *MTGCAE* is significantly related to *UnexpectedFees* for both Spearman and Pearson correlations ($p < 0.05$).

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[10] We note that we control for experience as part of the *IAQuality* measure. If we separately control for experience (i.e., do not use it to compute *IAQuality*), then the results are qualitatively similar to those reported. We also note that the turnover measure captures turnover of all employees (including the chief audit executive) of the IAF (see Appendix A for additional discussion). As an additional control variable, we include an indicator variable indicating whether the chief audit executive is new (i.e., less than one year of experience as the chief audit executive of this company) and a variable measuring the number of years of experience the chief audit executive has as chief audit executive of the organization. The results are qualitatively similar to those reported when we include either of these variables. The years of chief audit executive experience is also significantly negatively related to unexpected audit fees ($p < 0.01$).

TABLE 1

Descriptive Statistics and Correlation Matrix

Panel A: Descriptive Statistics of Firms Included in Study

		Assets	*IRisk*	*Complexity*	*Leverage*	*ROA*	*Loss*	*IAQuality*	*Turnover*	*ACExpert*	*ACIndep*	*ACSize*	*Gindex*
MTG = 1	Mean	21,842	0.22	4.39	0.44	0.03	0.16	2.34	0.28	0.99	0.93	4.18	9.74
n = 283	Median	10,961	0.22	4.00	0.45	0.04	0.00	2.00	0.26	1.00	1.00	4.00	10.00
	Std. Dev.	33,068	0.14	1.97	0.16	0.12	0.36	1.18	0.19	0.23	0.14	1.11	2.39
MTG = 0	Mean	28,337	0.18	4.01	0.42	0.02	0.19	2.96	0.17	0.96	0.95	4.16	9.95
n = 67	Median	4,981	0.12	4.00	0.46	0.02	0.00	3.0	0.14	1.00	1.00	4.00	10.00
	Std. Dev.	87,957	0.16	1.80	0.16	0.06	0.40	1.07	0.18	0.21	0.11	1.26	2.14
t-statistic		0.59	−2.30**	−1.42	−0.99	−0.84	−0.77	3.88***	−4.44***	−1.11	1.47	−0.13	0.64
z-statistic		3.01***	−3.08***	−1.15	−0.36	−3.26***	0.77	4.13***	−5.44***	−1.08	1.35	−0.10	0.95

Panel B: Correlation Matrix of Variables of Interest (Pearson/Spearman below/above the diagonal)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. UnexpectedFees		**0.14**	**0.20**	*−0.09*	0.07	**−0.14**	*−0.09*	−0.04	0.07	0.01	0.07	**0.12**	0.04
2. MTG	**0.14**		**0.18**	**0.29**	**0.42**	*−0.10*	0.04	**−0.22**	**0.29**	0.06	−0.07	0.01	−0.05
3. MTGCAE	**0.19**	**0.18**		**−0.22**	**−0.32**	−0.05	0.04	**0.18**	−0.07	0.00	−0.05	0.09	*−0.10*
4. MTGEmp	−0.06	**0.29**	**−0.22**		**−0.52**	0.04	0.00	−0.06	−0.01	−0.03	−0.04	−0.02	0.05
5. MTGBoth	0.04	**0.42**	**−0.32**	**−0.52**		−0.07	0.00	**−0.23**	**0.28**	0.08	0.01	−0.03	0.02
6. TimeEA	**−0.16**	−0.08	−0.04	0.00	−0.04		**0.32**	**0.20**	−0.05	0.01	0.00	0.00	0.01
7. TimeF	*−0.10*	0.06	0.05	0.00	0.01	**0.24**		**0.39**	0.06	0.05	−0.08	0.07	−0.03
8. IAQuality	−0.03	**−0.20**	**0.17**	−0.05	**−0.23**	**0.20**	**0.39**		**−0.19**	0.05	−0.01	0.08	−0.02
9. Turnover	0.05	**0.23**	−0.08	−0.06	**0.29**	−0.05	0.06	**−0.16**		−0.04	0.07	0.00	**0.11**
10. ACExpert	0.02	0.06	−0.01	−0.04	*0.09*	−0.02	0.04	0.04	−0.05		0.06	0.07	0.02
11. ACIndep	0.09	−0.07	−0.03	−0.02	−0.02	−0.04	*−0.09*	0.01	0.02	0.07		0.02	*0.10*
12. ACSize	**0.11**	0.01	0.07	−0.03	−0.02	−0.09	0.05	0.08	−0.02	*0.10*	0.01		0.06
13. Gindex	0.04	−0.03	−0.07	0.06	−0.03	−0.03	−0.04	−0.05	0.06	0.02	0.06	0.06	

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*, **, *** Indicate statistical significance at the $p \leq 0.10$, 0.05, and 0.01 levels, respectively.

Bold (*Italics*) (in Panel B) signify two-tailed $p < 0.05$ (< 0.10).

In Panel A, the 283 (67) firm-year observations that have *MTG* = 1 (0) represent 129 (38) unique companies. *MTGCAE*, *MTGBoth*, and *MTGEmp* represent 23, 73, and 59 unique companies, respectively (these totals do not sum to 129 because some of the firms changed what positions they used as MTG during the time period).

See Appendix A for variable descriptions.

TABLE 2

Regression of Predictor Variables on External Audit Fees to Generate Unexpected Audit Fees

Variable	Hypothesized Sign	β	t-statistic
Intercept	?	10.014	162.6***
Assets	+	0.415	176.91***
IRisk	+	0.257	11.96***
Complexity	+	0.077	27.27***
Leverage	+	0.001	10.65***
ROA	−	−0.0002	−6.68***
Loss	+	0.178	19.5***
NonAuditFees	−/+	−0.045	−28.87***
BigN	+	0.346	29.65***
AuditSpecialist	+	0.108	8.32***
Andersen	−	−0.150	−7.46***
YearEnd	+	0.150	16.18***
CurrentRatio	−	−0.001	−6.98***
Acquisition	+	0.165	17.8***
AuditorChange	−	−0.197	−14.21***
GoingConcern	+	0.348	24.37***
ForeignSales	+	0.325	34.66***
ICWeakness	+	0.365	14.09***
Restate	+	−0.017	−0.85
AuditLag	+	0.002	15.67***
AuditTenure	+/−	0.008	6.07***
n	33,928		
Adj. R^2	0.777		

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*, **, *** Indicate statistical significance at the $p \leq 0.10$, 0.05, and 0.01 levels respectively.
Industry and year effects are repressed for presentational ease.
p-values represent one-tailed tests when a specific direction is predicted and the sign of the coefficient is consistent with that prediction.
See Appendix A for variable descriptions.

In order to examine how using the IAF as a MTG affects unexpected external audit fees, we first compute unexpected audit fees; Table 2 contains this computation. As expected, all variables are significantly related to external audit fees (all $p < 0.05$), except for *Restate* ($p = 0.80$). The overall adjusted R^2 is 0.777.

Table 3 presents a multivariate analysis of H1. H1 hypothesizes that companies that use the IAF as a MTG will be associated with higher external audit fees than companies that do not use the IAF as a MTG. Consistent with H1, Model 2 shows that *MTG* is significant and positively related to unexpected fees ($z = 2.11$, $p < 0.05$). This finding suggests that, regardless of the type of internal auditing position that is used as a MTG, the overall effect of this choice is positively associated with unexpected external audit fees. Thus, our results are consistent with H1.

Table 3, Model 3 presents evidence of how using different positions within the IAF as a MTG are associated with *UnexpectedFees*. The results reveal that using just the chief audit executive position as a MTG has the greatest effect on unexpected external audit fees, as *MTGCAE* is significantly greater in magnitude than *MTGEmp* ($F_{(1,\ 338)} = 11.46$, $p < 0.01$) and *MTGBoth* ($F_{(1,338)} = 4.55$, $p < 0.05$), and it is significantly different from not using the IAF as a MTG ($z = 2.91$, $p < 0.01$). *MTGEmp* and *MTGBoth* are marginally statistically different from each other ($F_{(1,\ 338)}$

TABLE 3

Multivariate Tests of IAF Characteristics' Relations with Unexpected External Audit Fees

		Model 2		Model 3	
Variable	**Hypothesized Sign**	**β**	**z-statistic**	**β**	**z-statistic**
Intercept	−/+	−0.400	−1.07	−0.386	−1.02
MTG	+	0.218	2.11**	—	—
MTGCAE	+	—	—	0.442	2.91***
MTGEmp	+	—	—	0.086	0.90
MTGBoth	+	—	—	0.227	1.90**
TimeEA	−	−0.016	−3.12***	−0.015	−2.98***
TimeF	−	−0.002	−0.85	−0.001	−0.80
IAQuality	−	0.029	0.74	0.015	0.45
Turnover	+	0.121	0.54	0.108	0.47
ACExpert	−	0.141	1.34	0.136	1.28
ACIndep	−	0.259	0.81	0.270	0.84
ACSize	−	0.033	1.02	0.027	0.85
Gindex	+	−0.001	−0.04	0.003	0.16
Test of *MTGCAE* = *MTGEmp*				F = 11.46***	
Test of *MTGCAE* = *MTGBoth*				F = 4.55**	
Test of *MTGEmp* = *MTGBoth*				F = 3.58*	
n		350		350	
Adj. R^2		0.040		0.067	

*, **, *** Indicate statistical significance at the $p \leq 0.10$, 0.05, and 0.01 levels respectively.

p-values represent one-tailed tests when a specific direction is predicted and the sign of the coefficient is consistent with that prediction.

Cluster-adjusted standard errors are used to compute z-statistics.

See Appendix A for variable descriptions.

$= 3.58$, $p < 0.10$), and MTGBoth is statistically different from not using the IAF as a MTG ($z = 1.90$, $p < 0.05$).

Of the control variables, *TimeEA* is significantly related to unexpected fees ($z = -3.12$, $p < 0.01$). The results for *TimeEA* are consistent with Prawitt et al. (2011a), suggesting that external audit fees are lower when internal auditors spend more time working as assistants. The remaining control variables are not statistically significant.[11]

IV. EXPERIMENTAL METHOD AND RESULTS

In light of the archival results that the use of the IAF as a MTG is associated with higher external audit fees, we conduct an experiment to examine why external audit fees are higher. Given external audit standards and prior work, we analyze whether external auditors perceive a difference in the objectivity, competence, and due professional care of internal auditors employed in a MTG relative to those not employed in a MTG.

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[11] We conducted two analyses to provide additional evidence that the results are not caused by a reduction in experience of the internal auditors or because of increased turnover in the IAF. First, we reran the data without the MTG variables and only included the turnover/experience variables. The turnover and experience variables are not significant. This provides additional evidence that it is not turnover/experience driving the results. Second, we reran the models after splitting the sample based on the median turnover. For both regressions the *MTGCAE* results are qualitatively similar. The *MTGBoth* variable results are similar for the sample of firms below the median on turnover and is close to being statistically significant for the sample of firms above average on turnover ($p = 0.133$). Given the smaller sample size of these tests, we believe this analysis again confirms that our results are not attributable to increased turnover resulting from using the IAF as a MTG.

Participants and Procedure

All participants for the experiment were external auditors in Norway. Participants were either given the instrument from a firm contact or completed the instrument in a classroom setting. First, a representative of one Big 4 firm emailed a copy of the experimental materials to 82 senior associates and managers, of which 26 responded (26/82 = 31.7 percent response rate). The participants were instructed to complete the case materials and return them directly to one of the researchers. Six participants were excluded because they reported having never assessed the IAF in their careers.[12]

Second, participants were also solicited from the graduate program at the Norwegian School of Economics and Business Administration in Bergen, Norway.[13] Fifty-five participants completed the experiment in a class setting. The majority of these participants were from various Big 4 accounting firms.[14] All participants were employed as auditors when the experiment was administered. We excluded three participants who did not respond to the experience question or did not work for an international accounting firm. We excluded responses from 17 participants because they reported having never assessed the IAF in their careers. We also excluded 12 participants who indicated that they were staff auditors. Combining the two samples, our experimental results are based on 43 responses from 35 senior associates and 8 managers.[15] Table 4 provides demographic information on the participants by each level of MTG.

Experimental Task and Manipulations

The experimental task consisted of participants reading a case scenario of a hypothetical company and answering questions about the company. The case was loosely based on a case used by Glover et al. (2008). In order to be realistic for participants, the case described a Norwegian audit client that is publicly traded on the Oslo exchange. As a result, the case did not involve an audit of the client's internal controls over financial reporting that would have been mandated in the U.S.

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[12] The self-report question about experience assessing the IAF asked "In the course of conducting audits, how often have you played a role in assessing a client's internal audit function as part of assessing control risk?" The answers were given on an 11-point scaled anchored by "Never" at 0 and "Very Often" as 10. Participants who responded 0 were excluded because they did not have experience performing the task in their professional careers.

[13] To enter this graduate program, students must either successfully pass first-level Norwegian certification exams or have a four-year business degree. In order to be eligible for the highest Norwegian certification (state authorization), students must have three years of practical training and complete the graduate program, which includes a final examination. When entering this program, most students have between one and three years of audit experience. A small number lack such experience.

[14] The Norwegian Big 4 firms service U.S. companies operating in Norway and Norwegian companies with U.S. operations. Big 4 firms use similar methodologies internationally and the participants' Master's program audit training is based on International Auditing Standards (Eilifsen et al. 2010).

[15] We asked participants a manipulation check question. The manipulation check question asked participants to identify whether internal auditors were not promoted within the IAF, were promoted within the IAF (but only staff), or were promoted within the IAF (staff and chief audit executive positions). Participants were considered to have missed the manipulation check question if they were in the non-MTG condition and said internal auditors could be promoted into management positions or if participants were in either of the MTG positions and said internal auditors could not be promoted into management positions. Eleven participants missed the manipulation check questions. We do not exclude these participants from reported analyses in order to maintain sample size to test our hypotheses. Also, if the manipulations were ineffective, then we would not expect any differences between conditions. When we exclude these participants from analysis, inferences from our results are unaffected except that the statistical significance of some tests goes from the $p < 0.05$ level to the $p < 0.10$ level—a change that is consistent with a reduction in sample size.

TABLE 4
Participant Demographics by MTG Condition

Demographic Data	**No MTG (n = 16)**	**MTG Staff (n = 14)**	**MTG All (n = 13)**	**Total (n = 43)**
Professional Certification:				
Registered Public Accountant	1	0	2	3
State Authorized Public Accountant	3	5	3	11
Certified Internal Auditor	0	1	0	1
Position within firm:				
Associate	0	0	0	0
Senior Associate	13	12	10	35
Manager/Senior Manager/Director/Partner	3	2	3	8
Average (Std. Dev.) external/internal audit experience in years:				
External audit with international audit firm	3.13	2.71	4.5	3.41
	(1.96)	(1.93)	(6.35)	(3.82)
External audit with national audit firm	0.38	0.36	0.15	0.30
	(1.09)	(0.93)	(0.55)	(0.89)
Internal audit with public company	0	0.14	0	0.13
	(0.0)	(0.53)	(0.0)	(0.5)
Internal audit with private company	0.06	0	0	0.06
	(0.25)	(0.0)	(0.0)	(0.24)

Participants read background information about the company's business, industry, and management. Participants were then told that this was the first year their firm was performing the audit of the client because the client felt it was not receiving good client service from the engagement partner of the previous audit firm. Participants then learned that team members had already performed risk-assessment procedures to gain an understanding of the client's internal controls and had reviewed the other COSO internal control components, but that the team had not yet evaluated the client's monitoring component.

At this point in the case, the experimental manipulation was introduced. After a brief discussion of the IAF, participants read one of the following three descriptions:

No MTG Condition: "When hiring new internal auditors, the Company targets individuals with Bachelor's Degrees or Master's Degrees who have some prior audit experience. The Company has a policy of not promoting internal auditors into positions outside of the internal audit function."

MTG Staff Condition: "When hiring new internal auditors, the Company targets individuals with Bachelor's Degrees or Master's Degrees who have some prior audit experience. The company has a policy of trying to promote internal audit staff into management positions outside of the internal audit function, but will not promote the chief audit executive (head of the internal audit department) into management positions outside of the internal audit function. Senior management decides which internal auditors to hire into management positions after the internal auditors have worked for 3 to 5 years in the internal audit department."

MTG All Condition: "When hiring new internal auditors, the Company targets individuals with Bachelor's Degrees or Master's Degrees who have some prior audit experience. The company has a policy of trying to promote internal audit staff and the chief audit executive (head of the internal audit department) into management positions outside of the internal

> audit function. Senior management decides which internal auditors to hire into management positions after the internal auditors have worked for 3 to 5 years in the internal audit department."

The case then described that the internal audit's main purpose is to perform activities related to the monitoring component of the COSO framework, followed by a discussion of common activities an IAF would perform when monitoring internal controls. We held experience constant across conditions by including information that indicated the rank, education, and certifications of the individuals who were in the IAF. Finally, participants answered questions related to the case.

Measures

After reading background material, participants were asked to answer questions related to the objectivity, competence, and due professional care of the internal auditors. See Appendix B for the exact wording of these questions.

H2 predicts that external auditors will perceive MTG internal auditors to have lower objectivity than non-MTG internal auditors. We also investigate whether external auditors will perceive differences in the competence and due professional care of internal auditors employed in an IAF that is used as a MTG (RQ). We collapse the two MTG conditions to test H2 and the research question and make comparisons using t-tests. Similar to the archival analysis, we also test whether there are differences between using staff positions or all IAF positions as a MTG. To make these comparisons, we test ANOVA contrasts of the different MTG conditions and the appropriate dependent variable (i.e., objectivity, competence, or due professional care).

Results

We use separate t-tests to examine H2 and the RQ with MTG setting as the independent variable and objectivity, competence, and due care as the separate dependent variables. The results of these tests are reported in Table 5, Panel A. As can be seen from these tests, external auditors perceive internal auditors working in a MTG to be less objective than internal auditors working in a non-MTG environment ($p < 0.01$), supporting H2. The results also suggest that external auditors do not perceive differences in the competence or due professional care of internal auditors working in an IAF used as a MTG (p's > 0.10), which sheds some light on the RQ.[16]

Similar to the archival analysis, we split MTG conditions into whether just staff internal audit positions are used as a MTG or whether all internal audit positions are used as a MTG. We did not include a chief audit executive only condition in the experiment, which allowed us to avoid overusing valuable auditing subjects. This condition was the least likely to occur in our archival results.

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[16] In addition to testing H2 and the RQ, we also asked participants to assess IAF monitoring effectiveness, monitoring control risk, and the degree to which the participants would rely on controls to decrease substantive testing. In untabulated analysis, we regress the measures of objectivity, competence, and due professional care on participants' evaluations of IAF monitoring effectiveness and find that all three variables significantly and positively affect IAF monitoring effectiveness ($p < 0.10$), consistent with prior research examining external auditors' evaluations of the IAF (see Gramling et al. [2004] for a review of this work). We also regress the IAF monitoring effectiveness measure on participants' monitoring control risk assessments, followed by regressing their monitoring control risk assessments on the control reliance measure. Results from both regressions are statistically significant in the direction predicted by prior research (p's < 0.01). While these significant associations are directionally consistent with our expectations, they do not formally test whether the MTG manipulation affected the final reliance decision in our experiment. An alternative approach is to test for mediation by examining whether the use of the IAF as a MTG is directly associated with the control reliance measure and then test whether measures of objectivity, competence, due care, internal auditor effectiveness, and control risk mediate this relation. However, we do not find evidence that using the IAF as a MTG is directly associated with the control reliance measure.

TABLE 5

Cell Means and Statistical Tests for the Experiment

Panel A: Cell Means and t-test Results Based on Using the IAF as a MTG or Not

Variable	No MTG	MTG	t-statistic	p-value
Number of Participants	16	27		
Objectivity	1.13	−0.74	2.41	0.006
Competence	3.94	3.78	0.62	0.541
Due Professional Care	2.50	1.85	1.34	0.187

Panel B: Cell Means and Contrast Results for Measures

Variable	No MTG (A)	MTG Staff (B)	MTG All (C)
Number of Participants	16	14	13
Objectivity	1.13^{BC}	-0.93^{A}	-0.54^{A}
Competence	3.94	3.93	3.62
Due Professional Care	2.50	1.86	1.85

p-values represent one-tailed tests when a specific direction is predicted and the sign of the coefficient is consistent with that prediction.

For Panel A, t-statistics control for unequal variances if Leven's test for equality of variances is significant at the p-value < 0.10 level.

Individual contrast results are presented in Panel B by the use of letters (e.g., No MTG is represented by A). If a capital (lowercase) letter is listed by the value in Panel B, then it suggests that cell is statistically different at the $p < 0.05$ ($p < 0.10$) level from the letter listed as a superscript. For example, the B and C listed next to the Objectivity value of 1.13 in the No MTG condition means that the No MTG condition is significantly different from the MTG All condition at the $p < 0.05$ level (because of the C superscript) and significantly different from the MTG Staff condition at the $p < 0.05$ level (because of the B superscript).

See Appendix B for variable descriptions.

In separate (untabulated) ANOVA models, we find that the manipulated variable significantly affects perceptions of objectivity ($p < 0.05$) but not perceptions of competence or due care (both $p > 0.10$). Table 5, Panel B presents simple means and contrasts comparisons within each separate ANOVA model. Table 5 shows that external auditors perceive internal auditors employed in either MTG arrangement as less objective than when the client does not use the IAF as a MTG (all $p < 0.05$), but that there is not a significant difference between using just staff internal audit positions and using all internal audit positions as a MTG ($p = 0.66$). This result is not entirely consistent with the archival results—that is, in the archival analysis we did not find evidence that using the staff internal audit positions as a MTG is associated with higher fees. One potential reason for this difference is that use of the IAF as a MTG could affect external auditors' perceptions of companies (such as the one used in the experimental study) on average, but not in all cases. Thus, if we were able to increase our archival sample size, we might be able to find an effect even for staff internal auditors.[17] With the data we have, we are unable to explain why we observe these differences based on methodology and encourage future research to continue examining this issue.

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[17] We may not observe a difference in the archival results because the actual effect size could be small such that our sample size is not of sufficient size to find significant results. We note that our archival results are in the right direction, just not statistically significant.

In summary, our experimental results provide evidence that using the IAF as a MTG negatively affects external auditors' perceptions of internal auditor objectivity. The experimental results do not provide any evidence that using the IAF as a MTG affects external auditors' perceptions of internal auditor competence or due care.

V. SUMMARY AND CONCLUSIONS

We use an archival analysis and an experiment to examine how using the internal audit function (IAF) as a management training ground (MTG) impacts a client's external audit fees and external auditors' evaluation of the IAF. By using both methods, we are able to leverage some of the benefits of both archival and experimental approaches (Libby et al. 2002; Waller and Zimbelman 2003).

In our archival analysis, we find that external audit fees are significantly higher for companies that use the IAF as a MTG. We further find that firms pay the highest external audit fees when they use only the chief audit executive position as a MTG followed by using all internal audit positions as a MTG. Using just staff positions as a MTG is not associated with external audit fees. We suggest that the reason for the fee effects is that external auditors attribute internal auditors work in a MTG to their incentives to please management rather than to their performance of objective, independent testing. Consistent with this reasoning, in our experimental results, we find that external auditors judge internal auditors to have lower objectivity when the client uses the IAF as a MTG. In summary, using archival data we find that using the IAF as a MTG impacts external audit fees. We follow up on this finding by providing experimental evidence that one reason for the higher fees could be that external auditors perceive internal auditors in an IAF used as a MTG to be less objective than internal auditors employed in an IAF not used as a MTG.

These results should be useful to many different stakeholders. Given that nearly 65 percent of *Fortune* 1000 U.S. corporations use their IAF as a MTG (Abbott et al. 2010), boards of directors, audit committees, and managers interested in using the IAF as a corporate governance tool may want to consider whether this practice limits the potential of the IAF to serve as an effective governance mechanism—especially the practice of using the chief audit executive position as a MTG. Chief audit executives could also consider how to encourage internal auditors in a MTG to develop the internal auditing skills necessary to maintain a high-quality IAF and how they can increase perceived objectivity if the IAF is used as a MTG. External auditors could use these results to examine whether they explicitly consider the use of the IAF as a MTG in their assessment of internal audit quality. Finally, these results provide relevant information to regulators and standard-setters as they consider the costs and benefits of using the IAF as a MTG.

The results of this study should be viewed in light of certain limitations. First, we conducted our experiment using external auditors employed outside of the United States, while our archival analysis was conducted using data within the United States. We recognize that auditors in different countries face different reporting requirements, litigation settings, and at least some differences in determining audit costs. While international external audit standards differ slightly in how the IAF should be evaluated (e.g., international standards require assessing "due care") (see AICPA 1990; PCAOB 2007; IFAC 2009), we were able to control for this in our statistical analyses by asking auditors to assess due care as required by international standards (IFAC 2009). Furthermore, the objectivity effect we observe is a required assessment both within the United States and internationally.

A second limitation is that the archival data for this study were collected from surveys of the heads of internal audit organizations. The data were gathered by a party independent to this research project (the IIA), and the data we use are a subset of the survey they conducted. We have taken steps to mitigate the possibility of inaccuracies in the data by verifying the data against other sources (i.e., Compustat). A third limitation is that our study analyzed a relatively restricted sample of companies. Although this sample is very large for a study examining internal audit attributes, our ability to generalize the results of this study to all other companies is limited.

Finally, our archival and experimental results are not entirely consistent. When we break down the use of the IAF as a MTG into different positions, the experimental results suggest that using just staff positions as a MTG is associated with differential perceptions of objectivity but the archival results suggest there is not a relation between the use of the IAF as a MTG and external audit fees. While this could be an artifact of a relatively small archival sample (or a small effect size), we encourage future research to examine this issue more closely.

This study could potentially lead to several avenues of future research. For instance, researchers could test whether using the IAF as a MTG has a more direct impact on the corporate governance of firms by testing whether firms that use the IAF as a MTG are more likely to manage earnings or commit fraud. In addition, research is needed to examine whether internal auditors' objectivity is in fact impaired, or if it is only the perception of their objectivity that differs based on the use of the IAF as a MTG. Finally, future research can examine ways to improve internal audit quality while still using the IAF as a MTG.

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APPENDIX A
VARIABLE DESCRIPTIONS

Archival Variable Descriptions

ACExpert = a dichotomous variable taking the value of 1 if internal auditors surveyed in the GAIN survey responded to the following question in the affirmative "All [audit committee] members possess core skills including finance literacy," and 0 otherwise;

ACIndep = the percentage of audit committee members who were listed as independent on the Risk Metrics Database;

ACSize = the number of audit committee members listed on the Risk Metrics Database;

Acquisition = a dichotomous variable taking the value of 1 if a company has any nonzero amount listed acquisition-related accounts in their statement of cash flows (Data129) or in their income statement (Data377), and 0 otherwise;

Andersen = a dichotomous variable indicating whether the company's external auditor during that year was Arthur Andersen (yes = 1, no = 0);

Assets = total assets (Data6) in millions (natural log used in regression models, original value in millions reported in descriptive statistics);

AuditLag = the difference between a company's fiscal year-end and the date the audit report was issued;

AuditorChange = a dichotomous variable indicating whether the company changed auditors in the last year (yes = 1, no = 0);

AuditSpecialist = a dichotomous variable that indicates whether the external auditor is an industry specialist auditor. We define industry specialist auditor as a Big N audit firm whose within-industry market share is 30 percent greater than if the audit firms were to split the industry evenly among themselves;

AuditTenure = the number of years the external audit has provided the company's external audit;

BigN = a dichotomous variable indicating whether the company's external auditors is a Big N auditor (yes = 1, no = 0);

Complexity = the number of business segments that the company has;

CurrentRatio = the current ratio of the company (Data4/Data5);

EAFees = external audit fee in millions paid by a company to its external auditor (natural log used in regression model);

ForeignSales = a dichotomous variable indicating whether a company has any foreign sales listed in the Compustat segments file (yes = 1, no = 0);

Gindex = corporate governance metric computed by Gompers et al. (2003). For years the metric was not computed (i.e., 2001, 2003, and 2005), the average of the metric for the year before and after the unreported year was used. Higher values of *Gindex* indicate more management power (and therefore worse corporate governance);

GoingConcern = a dichotomous variable indicating whether the company received a going concern audit opinion (yes = 1, no = 0);

IAQuality = a single composite score measuring the quality of the IAF. The variable can range from 0 to 6 with 0 representing the lowest quality and 6 representing the highest quality. The score is formed by assigning a value of 1 to scores above the median of the entire sample for *Experience*, *Certification*, *CAEAC*, *Training*, and *IASize*, and summing together. These variables are defined as follows:

Experience = average number of years of internal audit experience of the internal auditors;

Certification = the percent of internal auditors who have the CIA or CPA certification; (number of auditors with the CIA or CPA certification/total professional staff in the IAF);

CAEAC = a dichotomous variable representing whether the chief audit executive reports to the audit committee (yes, *CAEAC* = 1; no, *CAEAC* = 0);

Training = the actual, average amount of training hours internal auditors attend during the year;

IASize = the average dollar amount spent on internal auditing for the industry divided by the average total assets of the industry subtracted from the dollar amount spent on internal auditing per company divided by the company's total assets. This amount is then divided by the average dollar amount spent on internal auditing for the industry divided by the average total assets of the industry;

ICWeakness = a dichotomous variable indicating whether a firm experienced an internal control weakness. Data for internal control weaknesses is from Doyle et al. (2007). For years when there are no data available, all firm-year responses were coded as not having an internal control weakness;

IndustryDummies = a dichotomous variables used to represent each of Fama and French's (1997) industry classifications;

IRisk = sum of inventory (Data3) and receivables (Data2) divided by total assets (Data6);

Leverage = the sum of long-term debt (Data9) and current liabilities (Data5) of a company divided by total assets (Data6);

Loss = a dichotomous variable indicating whether the company experienced a loss in the previous year (yes = 1, no = 0);

MTG = a dichotomous variable taking the value of 1 if at least one of the *MTGCAE*, *MTGEmp*, or *MTGBoth* variables equaled 1, and 0 otherwise;

MTGBoth = a dichotomous variable indicating whether the company uses both staff internal auditor positions and the chief audit executive position as a management training ground (yes = 1, no = 0);

MTGCAE = a dichotomous variable indicating whether the company uses the chief audit executive position as a management training ground (yes = 1, no = 0);

MTGEmp = a dichotomous variable indicating whether the company uses staff internal auditor positions as a management training ground (yes = 1, no = 0);

NonAuditFees = nonaudit fees paid by a company to its external auditor scaled by the external audit fee;

Restate = a dichotomous variable indicating whether the company experienced a restatement. Data for restatements were collected from Audit Analytics;

ROA = return on assets (Data172/Data 6);

TimeEA = the percentage of time the IAF spends providing assistance to the external auditors;

TimeF = the percentage of time the IAF spends performing tasks that are financial in nature;

Turnover = the number of professional staff who left the IAF divided by the total number of internal audit staff;[18]

UnexpectedFees = residual from the following regression: $EAFees = \beta_0 + \beta_1 Assets + \beta_2 IRisk + \beta_3 Complexity + \beta_4 Leverage + \beta_5 ROA + \beta_6 Loss + \beta_7 NonAuditFees + \beta_8 BigN +$

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[18] Our examination of "professional staff" suggests that respondents considered all members of the IAF as part of "professional staff" and not entry-level (staff) auditors. This inference is based on other questions that refer to "professional staff" and list all members of the IAF as having a specific characteristic (e.g., professional certification or experience).

$\beta_9 AuditSpecialist + \beta_{10} Andersen + \beta_{11} YearEnd + \beta_{12} CurrentRatio + \beta_{13} Acquisition + \beta_{14} AuditorChange + \beta_{15} GoingConcern + \beta_{16} ForeignSales + \beta_{17} ICWeakness + \beta_{18} Restate + \beta_{19} AuditLag + \beta_{20} AuditTenure + (\beta_{21}–\beta_{25}) YearDummies + (\beta_{26}–\beta_{71}) IndustryDummies + \varepsilon$;

YearDummies = a dichotomous variable for each year indicating whether the data are from a specific year (= 1) or another year (= 0); and

YearEnd = a dichotomous variable indicating whether the company's fiscal year-end is December (yes = 1, no = 0).

APPENDIX B

Experimental Variable Descriptions

We asked the participants to evaluate the following statements for each measure:

Objectivity: "The internal auditors at Lunt Technologies are *objective* in their decision making."

Competence: "The internal auditors at Lunt Technologies are technically *competent* to perform their duties."

Due Professional Care: "The internal auditors at Lunt Technologies are likely to perform their duties with due professional care."

Objectivity, Competence, and Due Professional Care were measured on 11-point scales anchored at –5, Strongly Disagree, and 5, Strongly Agree (0 was labeled "Neither Disagree Nor Agree").

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Disclosure Tone and Shareholder Litigation

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ABSTRACT: We examine the relation between disclosure tone and shareholder litigation to determine whether managers' use of optimistic language increases litigation risk. Using both general-purpose and context-specific text dictionaries to quantify tone, we find that plaintiffs target more optimistic statements in their lawsuits and that sued firms' earnings announcements are *unusually* optimistic relative to other firms experiencing similar economic circumstances. These findings are consistent with optimistic language increasing litigation risk. In addition, we find incrementally greater litigation risk when managers are both unusually optimistic and engage in abnormal selling. This finding suggests that firms can mitigate litigation risk by ensuring that optimistic statements are not contradicted by insider selling. Finally, we find that insider selling is associated with litigation risk only when contemporaneous disclosures are unusually optimistic.

Keywords: *securities litigation; disclosure; tone; earnings announcements; insider trading.*

JEL Classifications: *G38; K22; M41; M48.*

Data Availability: *Data are available from sources indicated in the text.*

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I. INTRODUCTION

This study examines the relation between disclosure tone and shareholder litigation. Our goal is to determine whether managers' use of soft information (i.e., use of qualitative statements to present the firm in a more or less favorable light) contributes to the likelihood of being sued by shareholders. Our interest in disclosure tone, specifically optimism, arises from the nature of plaintiff allegations in a typical disclosure-related securities lawsuit. Although the particular allegations vary from case to case, they share a common underlying theme: Investors allege that their prior expectations regarding firm value were too high, and that those expectations were based on the firm's unduly optimistic disclosures.

How disclosure tone affects litigation is an open question for several reasons. First, although firms employ a variety of tools in attempts to avoid the high costs associated with securities lawsuits, executives continue to express uncertainty about the causes of litigation and what they can do to avoid being sued.[1] For example, survey evidence reveals that executives view the U.S. legal environment as significantly more unpredictable than that of the United Kingdom.[2] Rogers and Van Buskirk (2009) support this evidence—firms make significant changes to their disclosure policies after being sued, consistent with managers gaining a better understanding of the link between disclosure and litigation after going through the litigation process.

Second, whether managers should be held legally accountable for qualitative disclosures is a hotly debated topic (e.g., Brudney 1989; O'Hare 1998; Roussel 1998; Huang 2005; Hoffman 2006) that has yet to be resolved in the legal community. The debate centers on the question of whether a qualitative statement can ever be considered material, or whether, by its very nature, such language is puffery (e.g., hype or exaggerated promotional language) and thus fails to constitute a material statement of fact. As we discuss later, courts have ruled on both sides of this issue. In some cases, statements such as "demand has been strong" survived the motion to dismiss (In *re Smith & Wesson Holding Corp.*, 604 F. Supp. 2d 332 (Mass. 2009)). In other cases, statements such as "revenue and earnings growth outlook remains positive" were deemed immaterial puffery (*Ind. State Dist. Council of Laborers v. Omnicare, Inc.*, 583 F.3d 935 (6th Cir. 2009)). We expect the lack of consensus regarding the materiality of qualitative language leads to management uncertainty about whether disclosure tone influences litigation risk.

Finally, to the best of our knowledge, the findings of Francis et al. (1994) represent the current state of knowledge about the relation between disclosure tone and litigation risk. Although not the primary focus of their study, they examine whether their subjective assessment of disclosure tone influences the probability of being sued. Their study was implemented during a different regulatory environment (prior to the Private Securities Litigation Reform Act of 1995 [PSLRA]) and, importantly, finds no relation between tone and litigation.

Motivated by these factors, our study examines the extent to which differences in qualitative language are systematically related to differences in litigation risk. We begin our analysis by investigating the disclosure channels likely to affect the probability of litigation. This investigation takes two forms. The first analyzes specific statements cited as misleading in the plaintiffs' complaints. Our review of a random subsample of complaints reveals that earnings announcements are the most consistently cited type of communication. The second examines the alignment between damage periods and earnings announcements. For our full sample of lawsuits, we find that the majority of damage periods begin on an earnings announcement date, indicating that the earliest alleged misstatement was likely part of an earnings announcement. Collectively, this evidence suggests that earnings announcements play a central role in shareholder litigation.

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[1] Examples of these tools include insider trading blackout windows (Bettis et al. 2000; Roulstone 2003) and 10b5-1 trading plans (Jagolinzer 2009) to reduce litigation risks.

[2] "Sustaining New York's and the US' Global Financial Services Leadership" is found at http://www.nyc.gov/html/om/pdf/ny_report_final.pdf

Next, we return to the random subsample of complaints to determine whether plaintiffs focus on optimistic language. Using three different dictionary-based measures of optimism (as well as a factor score that combines the three measures), we compare the tone of the quoted portion of each earnings announcement to the tone of the remainder of the earnings announcement (i.e., the non-quoted portion of the cited earnings announcement). For each optimism proxy, we find that the particular statements plaintiffs choose to quote in their class action complaints are measurably more optimistic than the remainder of the document. This result bolsters the view that plaintiffs target optimistic language in their lawsuits. Furthermore, this result helps validate our method of quantifying optimistic language and provides assurance that our results do not depend upon a particular dictionary choice.

Showing that plaintiffs target optimistic statements is necessary, but not sufficient, to establish a more general link between optimistic language and increased litigation risk. After all, every firm is likely to make *some* optimistic statements (even if the aggregate tone of their disclosures is neutral or even negative). To learn whether sued firms' disclosures are *unusually* optimistic, our main analysis compares the tone of the sued firms' earnings announcements during the damage period to the tone of disclosures made by non-sued firms at the same time, in the same industry, and experiencing similar economic circumstances (i.e., similar size and performance).

Our primary result is that sued firms use substantially more optimistic language in their earnings announcements than do non-sued firms. We find that, after controlling for a host of performance-related and other firm characteristics, a change of one standard deviation in the aggregate optimism factor score is associated with a 75.9 percent increase in the likelihood of being sued. Collectively, these results indicate a strong link between disclosure tone and litigation. The difference in tone between sued and non-sued firms' disclosures is consistent with plaintiff allegations that managers issue overly optimistic disclosures during the damage period.

We then examine the combined effect of optimistic language and insider trading. A successful securities complaint requires plaintiffs to not only document a material misstatement, but also provide evidence that the manager acted with the requisite intent to deceive when s/he made that statement (i.e., scienter). Because courts recognize unusual and substantial insider selling as one way of demonstrating scienter, many lawsuits include insider selling allegations (Johnson et al. 2007; Rogers 2008), especially after the enactment of the PSLRA. Our evidence is consistent with optimism and insider selling jointly affecting litigation risk. Specifically, in addition to finding a significant main effect for optimism, we find that the interaction between optimism and abnormal insider selling is associated with an increased probability of being sued. This finding suggests that firms can mitigate litigation risk by ensuring that optimistic statements are not contradicted by insider selling. On the other hand, we find no evidence that insider selling, on its own, exposes the firm to increased litigation risk; insider selling is only associated with litigation when firm disclosures are optimistic.

Although our results are both statistically and economically meaningful, we share the sentiment of Loughran and McDonald (2011, 53) that "[t]extual analysis is not the ultimate key to the returns cipher." That is, disclosure tone is certainly not the sole determinant of litigation risk, nor is litigation risk the only cost or benefit relevant in the choice of disclosure tone. What we view as important, however, is that disclosure tone is both associated with litigation risk and under the discretion of management. In contrast to variables that are correlated with litigation risk but inflexible (e.g., firm size or industry membership), monitoring and adjusting disclosure tone could provide a straightforward means of reducing litigation risk.[3]

We also acknowledge the potential that environmental factors contribute to a firm's disclosure choices and can also lead to a greater risk of litigation (see, for example, Bloomfield [2008] for a discussion of this ontological explanation). While we include control variables to minimize this possibility, it nevertheless remains a limitation of our study. Finally, our use of a matched-sample design provides for a more direct examination of the relation between tone and litigation, although it limits our ability to generalize results. Subject to these caveats, our findings suggest that managers can reduce litigation risk by dampening the tone of disclosure.

While we do not provide a general examination of the costs and benefits of disclosure tone, our analysis of a single and substantial cost (i.e., expected litigation cost) helps to inform managers and audit committees about the trade-offs involved in setting disclosure tone. In addition, a link between discretionary disclosure behavior and litigation suggests that managers can influence the likelihood of being sued, a matter of great importance to those who view deterrence as the primary benefit of securities litigation.[4] Finally, our results shed light on a question prompted by prior studies of disclosure tone: Why would investors respond to an optimistic tone if there are no enforcement mechanisms to lend credibility to tone? Our results indicate that shareholder litigation could be an effective *ex post* mechanism to assure investors that managers are not simply engaging in cheap talk when they use optimistic language.

Section II discusses related research. Section III details our research design, while Section IV describes our sample data. Sections V and VI report the empirical results related to disclosure tone and the role of insider trading with respect to tone, respectively. Section VII concludes.

II. PRIOR RESEARCH

Disclosure Tone

Managers frequently use discretion to describe their firms' results in a favorable light. Lang and Lundholm (2000) study disclosure behavior before seasoned equity offerings, concluding that managers "hype" their stock by increasing discretionary disclosure, particularly optimistic disclosures. Rogers and Stocken (2005) show that managers are more likely to bias their earnings forecasts in situations where the market has greater difficulty detecting misrepresentation. Zechman (2010) provides evidence that firms strategically avoid disclosing information about off-balance sheet activity when the activity was done to enhance the appearance of financial reports, but not otherwise. Li (2008) finds support for the hypothesis that managers obfuscate poor results by issuing less readable disclosures.

Evidence reveals that these discretionary disclosure choices affect the perception of investors and analysts. For example, the increase in optimistic disclosures identified by Lang and Lundholm (2000) is associated with increased stock prices leading up to the equity offerings. Similarly, the level of optimism in an earnings announcement is positively associated with the market's short-term response to the announcement (Henry 2008; Demers and Vega 2008; Davis et al. 2008). The same relation holds for firm-generated SEC filings (Loughran and McDonald 2011), as well as information generated outside the firm—Tetlock et al. (2008) and Tetlock (2007) find that returns are correlated with the tone of firm-specific and more general news stories, respectively.

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[3] We interviewed a partner at one of the top plaintiffs' law firms (Cornerstone Research 2010), who agreed to provide anonymous background information. This partner read a draft of this paper and confirmed the accuracy of our discussion of the legal environment and plausibility of our findings.

[4] Coffee (2006) notes the current regulatory system provides very little compensation to injured shareholders, leaving deterrence as the primary benefit. But in order for litigation to be an effective deterrent to undesirable managerial behavior, managers must believe that their actions influence the likelihood of being sued.

One question that arises from prior research is why investors respond to variation in tone, rather than simply viewing it as puffery. While there are many forces to constrain the manipulation of quantitative disclosures (e.g., Generally Accepted Accounting Principles enforced by independent auditors; SEC monitoring of periodic filings), those mechanisms are not designed to provide credibility to qualitative statements. In the next section, we discuss an alternative monitoring mechanism: private securities litigation.

Shareholder Litigation

An important mechanism limiting managers' opportunistic disclosures is shareholder litigation, generally taking place under Rule 10b-5 of the Securities Exchange Act of 1934.[5] Rule 10b-5 makes it unlawful to "make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made . . . not misleading."[6] Under this rule, investors can initiate legal action after being harmed by a defendant's misrepresentations. These actions typically consist of complaints against the firm and its managers for providing misleading information that results in shareholder losses. Technically, complaints can arise from either purchasers (alleging share prices were too high when they purchased) or sellers (alleging share prices were too low when they sold). The vast majority of cases, however, involve purchasers alleging that the firm's misrepresentations led to stock prices that were too high (Francis et al. 1994).[7]

Evidence of a link between optimistic disclosure and litigation can be found in class action complaints. For example, the plaintiffs in In *re VoiceFlash Networks, Inc. Securities Litigation* (Second Amended Complaint, May 31, 2005, p. 2) allege that "The news that VoiceFlash would liquidate came on the heels of numerous highly optimistic announcements by the defendants touting the success of the Company's business condition and financial performance." As another example, a 2002 complaint against Metris Companies (*Hack, et al. v. Metris Companies, Inc., et al.*, U.S. District Court, District of Minnesota, p. 43) includes the allegation that the CEO "offered a hopelessly positive spin on his Company's capital plan."

Although plaintiffs often cite qualitative statements in their complaints, a recurring legal question is whether qualitative statements are material—only material misstatements are actionable under Rule 10b-5 (O'Hare 1998). The assessment of materiality hinges on whether disclosure of the omitted fact or correction of the misstated fact would have affected a reasonable investor's judgment by altering the "total mix" of available information.[8]

In their motions to dismiss security complaints, corporate defendants frequently characterize qualitative statements as "puffery," arguing that particular statements were simply promotional in nature and unlikely to influence reasonable investors' opinions regarding the firm.[9] While the SEC and legal academics have expressed skepticism that the puffery defense is appropriate in a securities regulation context,[10] courts have often granted motions to dismiss securities complaints on the grounds that the particular qualitative statements were mere puffery and, thus, immaterial as a matter of law.

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[5] 15 U.S.C. 78a *et seq.*

[6] 17 CFR §240.10b-5.

[7] One recent counterexample is that of Tyco (*Stevenson v. Tyco International*, filed April 29, 2005) which was sued by sellers of stock for allegedly providing overly pessimistic statements during the damage period.

[8] *TSC Industries, Inc. v. Northway, Inc.* 426 U.S. 438 (1970). The Supreme Court affirmed this standard with regard to 10b-5 cases in *Basic Inc. v. Levinson*, 485 U.S. 224, 232 (1988).

[9] A similar defense exists in common law actions, such as false advertising claims brought under the Lanham Act.

[10] Academic arguments against the puffery defense in a securities setting include Roussel (1998), O'Hare (1998), Huang (2005), and Padfield (2008).

In practice, the treatment of qualitative statements varies from case to case; one can find numerous examples of both successful and unsuccessful attempts to label qualitative statements as puffery.[11] The current state of affairs can perhaps be best summarized by *Brumbaugh et al v. Wave Systems Corporation* (416 F. Supp. 2d 239, 2006), in which the court wrote:

> "The corporate puffery rule applies to loose optimism about both a company's current state of affairs and its future prospects" (*Fitzer*, 119 F. Supp. 2d at 23). While courts continue "to find immaterial as a matter of law a certain kind of rosy affirmation commonly heard from corporate managers and numbingly familiar to the marketplace," (*Shaw v. Digital Equip. Corp.*, 82 F.3d 1194, 1217 (1st Cir. 1996)), [...] the recent trend is to consider expressions of corporate optimism carefully.

The court goes on (in footnote 11) to note that "dismissals on this ground [puffery] are increasingly rare."

The idiosyncratic treatment of qualitative statements likely contributes to managers' uncertainty about the role of qualitative language in litigation proceedings. Furthermore, we expect this uncertainty to extend to the more primitive question of whether qualitative statements expose firms to being sued, which is itself a very costly event. Our study is aimed at formally testing the relationship between the filing of lawsuits and the tone of qualitative statements.

Relation between Disclosure and Shareholder Litigation

Much of the existing literature on the link between disclosure and litigation is concerned with a firm's ability to avert litigation via timely disclosure of bad news.[12] Skinner (1994) notes that firms tend to preempt bad earnings news more frequently than good earnings news, conjecturing that they do so in order to avoid litigation, which is consistent with survey evidence in Graham et al. (2005). Francis et al. (1994) sample a group of firms in high litigation risk industries and point out that sued firms tend to issue forecasts more frequently than firms that are not sued, casting doubt on the notion that prompt disclosure deters litigation. Skinner (1997) examines a broader sample of firm-quarters that led to shareholder litigation and finds results consistent with Francis et al. (1994), but argues that forecast issuance could limit the costs of litigation even if it does not prevent a suit. He finds some evidence that early disclosure can reduce expected litigation costs by reducing settlement amounts, but notes that this relation is endogenous, as both the incentive to disclose early and the expected settlement amount are increasing in the damages suffered by shareholders. Field et al. (2005) explicitly model the endogeneity and conclude that disclosure potentially deters litigation.

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[11] For examples of unsuccessful attempts to characterize qualitative statements as puffery, see *McCarthy v. C-COR Electronics, Inc.*, 929 F. Supp. 199 (E.D. Pa. 1996); *Rosenbaum Capital LLC v. Boston Comm. Group, Inc.*, 445 F. Supp. 2d 170 (Mass. 2006); In *re Smith & Wesson Holding Corp.*, 604 F. Supp. 2d 332 (Mass. 2009); *Desai v. General Growth Props, Inc.*, No. 09 C 487, 2009 US. Dist. LEXIS 85271 (N.D. Ill. Sept. 17, 2009); *Billhoefer v. Flamel Technologies, SA*, No. 1:07-cv-09920, 2009 U.S. Dist. LEXIS 97287 (S.D. N.Y. Oct. 5, 2009); and *Arkansas Public Employee Retirement Systems v. GT Solar Int'l Inc.*, No. 08-cv-312-JL, 2009 U.S. Dist. LEXIS 93820 (N.H. Oct. 7, 2009). For cases of qualitative statements being dismissed based on lack of materiality, see *Lasker v. N. Y. State Electric & Gas Corp.*, 85 F.3d 55 (2d Cir. 1996); *Zerger v. Midway Games, Inc.*, No. 07 C 3797, U.S. Dist. LEXIS 96872 (N.D. Ill. Oct. 19, 2009); and *Ind. State Dist. Council of Laborers v. Omnicare, Inc.*, 583 F.3d 935 (6th Cir. 2009).

[12] Two exceptions are Johnson et al. (2007) and Nelson and Pritchard (2007). Johnson et al. (2007) compare the pre-PSLRA period to the post-PSLRA period and find that restatements and insider trading play a larger role in explaining litigation in the post-PSLRA period, while allegations related to forecasts play a smaller role. Nelson and Pritchard (2007) investigate the disclosures of "cautionary language," and find that firms facing greater litigation risk disclose more cautionary language, consistent with managers attempting to reduce expected litigation costs by altering their disclosure choices.

Most prior studies concentrate on firms about to experience negative earnings news, and then examine whether timely disclosure of the negative news deters litigation. Few investigate the allegedly misleading disclosures made in the damage period, or how those disclosures compare to disclosures issued by non-sued firms. Two exceptions are Francis et al. (1994) and Loughran and McDonald (2011), although the link between tone and litigation is not a central issue in either study. Francis et al. (1994) focus on pre-PSLRA disclosures that reveal adverse earnings news. They also study disclosures in the year prior to the adverse earnings news for both sued and non-sued firms, some portion of which would have been disclosed in the damage period. They read disclosures and manually code them as being optimistic, pessimistic, or neutral, finding no statistically significant differences in the proportions of optimistic/pessimistic/neutral disclosures between sued and non-sued firms. Loughran and McDonald (2011) develop a context-specific negative word list and explore the relation between their word list and a variety of capital market phenomena, including 10-K filing returns, trading volume, fraud, and material weaknesses. While aspects of both studies are in the spirit of our study, the combination of our sample construction (restricting our analysis to primarily disclosure-based lawsuits) and our empirical design (discussed in the next section) should allow for more powerful tests of the relation between tone and litigation.

III. EMPIRICAL DESIGN

Effectively measuring the relation between disclosure tone and litigation risk requires: (1) identifying which disclosures to examine, (2) quantifying disclosure tone, (3) choosing an appropriate benchmark for tone, and (4) controlling for factors correlated with both tone and litigation risk. This section discusses how our study addresses each of these items.

Identifying the Disclosures to Examine

In a securities complaint, plaintiffs must specify the damage period, or the window during which a company allegedly engaged in improper conduct. Within that period, a firm provides a variety of disclosures, including press releases, earnings announcements, interviews, conference presentations, and SEC filings. While prior studies have examined a variety of disclosures in the litigation context, including 10-Ks (e.g., Loughran and McDonald 2011; Nelson and Pritchard 2007) and other firm disclosures (e.g., Field et al. 2005; Francis et al. 1994), we are unaware of any empirical evidence documenting which disclosures are most frequently cited in complaints.

To determine which communications are important in terms of litigation risk, we use plaintiff complaints to identify commonly cited disclosures. Specifically, for a sample of 20 randomly selected lawsuits citing 294 unique communications, we identify the source for each alleged misstatement cited in the complaint and assume that the consistently cited documents in plaintiffs' complaints are those most likely to expose firms to litigation risk. By analyzing the most commonly cited documents, issued in the relevant time period (i.e., the damage period), we focus on the particular disclosures likely to put the firm at risk.[13]

Quantifying Disclosure Tone

We define optimistic tone as the extent to which managers frame their firms' results and/or outlook in a favorable manner. Consistent with Henry (2008), our definition of tone is influenced by the choice of which outcomes to emphasize, as well as the manner in which management describes those outcomes. For example, managers could choose to emphasize that "customer satisfaction scores are better than competitors' levels" (a favorable outcome) or that they were "very pleased" with their historical results (describing an outcome positively); both would be categorized as favorable tone. See Henry (2008) for a variety of ways in which firms can be more or less positive for a given set of outcomes.

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[13] In contrast, Francis et al. (1994) analyze disclosures in the year prior to an adverse earnings event, regardless of whether those disclosures occurred in the damage period.

To quantify optimistic tone in firms' disclosures, we use a form of content analysis that relies on pre-specified word lists. There is a rich history of academic research using content analysis in linguistics, where "*content analysis* may be briefly defined as the systematic, objective and quantitative analysis of message characteristics" (Neuendorff 2002, 1; emphasis in the original). The type of content analysis that we apply counts words characterized as optimistic and pessimistic based on either prior research in applied economics (Henry 2008; Loughran and McDonald 2011) or linguistics theory (Hart 1984, 1987). The general concept of using computer content analysis has been justified on a theoretical basis by establishing that "a set of words has a generally agreed upon effect upon readers" (West and Fuller 2001, 86). Neuendorff (2002) and Pennebaker et al. (2003) provide detailed reviews of this literature.

This method of quantifying disclosure language has become increasingly popular in recent years, and has several advantages over a subjective categorization. First, our proxies for optimistic tone are continuous rather than categorical, such as the measure used by Francis et al. (1994), which increases the power of our analysis. Second, the measure is normalized by word count, which allows for comparisons between disclosures of vastly different lengths. Finally, the process is objective, can be applied to large quantities of text, and provides results that are replicable by other researchers.

Rather than relying upon a single categorization scheme, we use three different "libraries" of words, each of which has been used to study firm disclosures. The first is obtained from Diction, a dictionary-based text analysis program that incorporates general context dictionaries designed to capture tone within a document. The second and third are designed specifically for use in the financial domain by Henry (2008) and Loughran and McDonald (2011), respectively.

Our choice to use multiple measures arises from the lack of clarity as to which is the most appropriate dictionary to address our research question. On one hand, dictionaries specific to the financial domain seem appropriate when studying investor responses to firm disclosures (Henry 2008; Loughran and McDonald 2011). However, a general dictionary may be more appropriate when studying how nonfinancial individuals (e.g., attorneys) assess these disclosures.[14] Additionally, the general context dictionary has the advantage of prior use in a variety of settings, which provides comfort that it captures meaningful semantic variation.[15] For these reasons, we use a combination of both general and context-specific dictionaries in our analysis.

Diction defines optimism as "language endorsing some person, group, concept, or event or highlighting their positive entailments." The Diction variable (*Optimism-Diction*) is calculated as the sum of three positive components (praise, satisfaction, and inspiration) minus the sum of three negative components (blame, hardship, and denial). For the second measure, we use the combination of positive and negative word lists from Henry (2008) to compute a similar optimism variable (*Optimism-Henry*). Finally, we use the negative word list developed by Loughran and McDonald (2011) as a third measure of tone (*Optimism-LM*). For our research question, we expect dictionaries that incorporate both positive and negative language (e.g., *Optimism-Diction* and *Optimism-Henry*) to be more powerful than dictionaries based strictly on negative language (e.g., *Optimism-LM*).

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[14] The interview with the previously mentioned securities litigation partner confirmed that it is the attorneys (and not hired linguistic or financial experts) who read firm disclosures to identify which statements to cite in their complaints. The partner was not aware of any firms that use linguistic software to aid in this process.

[15] The Diction word list, in particular, provides a general measure of tone and has been used in many contexts, including presidential speeches (Bligh et al. 2004); television versus newspaper coverage of major events (Cho et al. 2003); corporate annual reports (Yuthas et al. 2002); earnings announcements (Davis et al. 2008; Demers and Vega 2008); and other business communications (Ober et al. 1999), providing comfort that the quantitative measures capture semantic distinctions similar to those that motivate our study.

Each of these measures is constructed such that it is increasing in optimism (decreasing in pessimism), scaled by the word count of the document, and multiplied by 100 to obtain an optimism percent for each document.[16] Each list contains words that overlap with other lists, but the overlap is far from complete. With respect to the Henry wordlist, 25 percent of the words are contained in the Diction list (21 percent of the optimistic words overlap and 29 percent of the pessimistic words overlap). With respect to the LM list, there is a 59 percent overlap with the Henry pessimistic words and a 30 percent overlap with the Diction pessimistic words. Appendix A provides examples of the overlapping and non-overlapping words.

The measures of optimism based on these lists are significantly positively correlated but not perfectly correlated. (*Optimism-Diction* has positive correlations of approximately 0.55 with both *Optimism-Henry* and *Optimism-LM*, while *Optimism-Henry* and *Optimism-LM* have a correlation of 0.32.) This correlation structure is consistent with each measure capturing the underlying construct of optimistic tone plus idiosyncratic error. As a result, we use principal component factor analysis to construct a single factor from the three individual proxies as an alternative measure of disclosure tone. As expected, all three individual optimism variables load positively on one factor, which we label the *Optimism-Factor* score.[17] While we present all four measures in the tables, we focus our discussion on the *Optimism-Factor* results. This focus is driven by the expectation that the measurement errors in the individual dictionary scores are unlikely to be perfectly correlated, such that the combined measure should result in a better measure of optimism. At any rate, our results are substantially consistent across all four measures.

Choosing a Benchmark

Our principal analysis focuses on the overall optimism in the sued firms' disclosures during the damage period. This analysis requires a base level of optimism to use as a benchmark when evaluating the optimism of the sued firms' disclosures. We select a control group of non-sued firms and use the measured optimism from their disclosures as that benchmark. As discussed below, our matching procedure enables us to compare disclosures issued by firms experiencing comparable economic performance. Our goal, like that of Rogers and Van Buskirk (2009), is to compare two groups of firms whose underlying economic circumstances yield a similar ability to speak favorably, but whose discretionary disclosure choices vary.

Because discretionary disclosure is correlated with economic performance (Miller 2002), it is reasonable to expect that disclosure tone would also vary with performance. Given that firms are typically sued after a period of poor performance, a comparison of sued firms' disclosures to disclosures made by random firms would likely be biased in favor of finding differences across the two groups. To generate a more appropriate benchmark, we implement a modified version of the matching algorithm used in Rogers and Van Buskirk (2009).

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[16] To illustrate the types of words identified as increasing or decreasing optimism, Appendix A lists a subset of the terms in each of the three libraries that are unique to that library as well as a subset of words that overlap multiple libraries. Refer to Henry (2008) for her complete word lists. The word list developed by Loughran and McDonald (2011) can be found at http://www.nd.edu/~mcdonald/Word_Lists.html

[17] Our results are also robust to an alternative combined score that combines equally weighted standardized values of each dictionary measure.

For each sued firm, we use I/B/E/S data to identify the last earnings announcement prior to the beginning of the damage period and the first earnings announcement after the end of the damage period, and measure the stock return during that window (i.e., the return window fully encompasses the lawsuit's damage period).[18] Because the beginning and ending dates of the return measurement window are outside of the class action damage period, the stock prices can reasonably be assumed to reflect an unbiased measure of firm value. This implies that the return over that period is an unbiased measure of the firm's performance, even if the stock price within the damage period was (allegedly) inflated. Given that plaintiff attorneys have an incentive to identify as many potentially misleading statements as possible, we expect that this window provides conservative bounds for capturing unbiased prices.[19] From the population of all firms in the same two-digit SIC code and the same size decile, we select the non-sued firm having the closest stock return, measured over a period encompassing the same number of earnings announcements.[20]

This matching process is similar to that used by Rogers and Van Buskirk (2009), but it differs in two ways. First, we require industry matching, based on the expectation that disclosure content is likely to be similar within industries (e.g., pharmaceutical firms discussing clinical trials) as well as the observation that litigation risk appears to be clustered in certain industries in a given time period (Cornerstone Research 2009).[21] Matching on industry also addresses a concern raised by Loughran and McDonald (2011)—in some circumstances, measurement error could result from certain words reflecting industry membership rather than tone. Second, our windows span from earnings announcement to earnings announcement, rather than a strict calendar matching based on the sued firm's damage period. The centrality of earnings announcement dates is based on the frequency with which earnings announcements are cited in the class actions complaints, as we discuss in detail in Section V.

Controlling for Factors Correlated with Disclosure Tone and Litigation Risk

Just as a firm's discretionary disclosure behavior is influenced by its economic performance (Miller 2002), we expect disclosure tone to be correlated with performance; a firm that is performing very well and has a positive outlook will naturally have more favorable things to disclose than a firm in poor financial condition. The correlation tables in Henry (2008) and Davis et al. (2008) support this reasoning. Both studies document that measures of optimism are positively correlated with a variety of economic attributes, including contemporaneous returns, unexpected earnings, size, positive earnings, return on assets, and market-to-book ratios.

To account for the fact that firms with more positive performance tend to speak with more optimism, we include concurrent *Earnings Surprise*, *Return on Assets*, *Earnings Growth*, *Sales Growth*, an indicator variable for reporting a net loss (*Loss Indicator*), and the firm's economic performance during the class period (*Window Stock Return*) in all of our regressions. (All variables are defined in Appendix B.) Including these control variables helps to isolate the effect of the firm's optimism driven by management discretion, rather than by the firm's economic circumstances.

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[18] If the damage period begins on an earnings announcement date, the starting date for measuring returns is three trading days prior to that earnings announcement. Similarly, if the damage period ends on an earnings announcement date, the ending date is three trading days after the earnings announcement.

[19] Nevertheless, it is possible that plaintiff attorneys are not fully successful at capturing the entire period of misvaluation within the damage window. Due to this possibility, we expand the window for measuring returns to begin 30 days prior to the damage period and end 30 days after the damage period. Our regression results are robust to including this alternative control variable.

[20] We require that the match firm's measurement window begins within 365 days of the beginning of the sued firm's measurement window, ensuring that the periods span similar calendar time. We further require the returns of the matched firm to be within 25 percent of the sued firm's returns to ensure a reasonable performance match.

[21] We note that the industries subject to litigation are not constant over time—a Cornerstone Research report shows that from 2000–2008, the most frequently sued S&P sector in a calendar year included Technology (2000 and 2006), Communications (2001), Utilities (2002), Consumer Non-Cyclical (2003 and 2005), and Financial (2004, 2007, and 2008). Only the Basic Materials, Consumer Cyclical, Energy, and Industrial sectors failed to reach the highest place in any year (Cornerstone Research 2009).

Another matter is that firms' disclosure choices tend to be correlated (Lang and Lundholm 1996; Botosan and Plumlee 2002). To isolate disclosure tone from other disclosure attributes, we include the number of management forecasts issued (*Log Forecasts*) and the length of the firm's earnings announcement (*Log Word Count*).

In addition to the factors previously mentioned, we expect other firm characteristics to be associated with the likelihood of being sued. Some of these are based on the necessary elements of a successful private action under SEC Rule 10b-5, while others relate to aspects of the firm's information environment. We discuss these factors below.

To prevail in the lawsuit, a plaintiff must demonstrate an economic loss and that the loss was caused by the defendant's misstatements.[22] We include the minimum one-day stock return (*Minimum Daily Return*) because it has been used to show evidence of both economic loss and loss causation (Skinner 1994; Johnson et al. 2007). To account for possible nonlinearities in the relation between minimum one-day returns and litigation risk, we include a squared daily return variable. Firms with greater share *Turnover* are more likely to be sued, as greater turnover implies a potentially larger class of plaintiffs (Field et al. 2005). As previously mentioned, a private class action suit requires that the plaintiff demonstrate material misrepresentation and scienter. The primary focus of our study is whether optimistic tone can be used to claim material misrepresentation. We include *Abnormal Insider Trading* because plaintiffs often point to insider sales as evidence that managers acted with intent, or scienter (Johnson et al. 2007).

Finally, we control for firm characteristics leading up to the damage period that have been found to be associated with litigation in prior research. We include *Lag Size* because larger firms are more likely to be sued, perhaps because they are more likely to provide large settlements (Field et al. 2005). Because firms with better growth opportunities could have more favorable information to convey, we also control for *Lag Book-to-Market*. We include *Lag Log Analysts* and *Lag Volatility* (return volatility) to account for differences in information environment across firms. We control for firm performance leading up to the damage period by including *Lag Return on Assets*, *Lag Earnings Growth*, *Lag Sales Growth*, and an indicator for reporting a net loss (*Lag Loss Indicator*).

IV. SAMPLE DATA

We obtain litigation data from Woodruff-Sawyer, a San Francisco-based insurance brokerage firm.[23] The criteria for inclusion in this dataset are:

- The suit was filed in federal court against a corporation.
- The suit alleged fraud involving the price of the defendant's common stock.
- The case included allegations of material misrepresentations and omissions regarding the true health and potential of the defendant company.

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[22] *Dura Pharmaceuticals, Inc. v. Broudo*, 544 U.S. 336 (2005).

[23] Woodruff-Sawyer aggregates the data for its own uses, one of which is to advise its clients on D&O insurance coverage. Woodruff-Sawyer uses many sources to generate this data, including Stanford's Securities Class Action Clearinghouse (SCAC), Securities Class Action Services, SEC filings, and wire services. As discussed in Rogers and Van Buskirk (2009, fn 16), the cases within the SCAC database should also be contained in the Woodruff-Sawyer database, with the only exceptions being mutual fund cases and broker/dealer cases. Rogers and Van Buskirk (2009) provide some testing of this claim. For a further discussion, see Rogers and Van Buskirk (2009).

Our interest lies in the contribution of discretionary disclosure choices to litigation risk and so, like Rogers and Van Buskirk (2009) and Field et al. (2005), we do not include lawsuits related to IPO allocations, earnings restatements, mergers and acquisitions, or options backdating. For our initial analysis of 20 lawsuits, we focus on lawsuits with damage periods beginning after the enactment of Regulation Fair Disclosure (Reg FD). This restriction ensures that the disclosures in question were all in the public sphere (and available for us to examine).[24] For our full sample analysis, we further require CRSP, Compustat, First Call, and I/B/E/S coverage, as well as at least one earnings announcement within the damage window available on DirectEDGAR, for the sued firms as well as the matched firms. A total of 165 lawsuits meet all the requirements for our full sample analysis.[25] Table 1 summarizes the characteristics of these lawsuits.

The lawsuits target firms in multiple industries and vary in damage period length. The population of 165 lawsuits was filed from 2003–2008, with alleged periods of misconduct ranging from one month to five years (Table 1, Panels A and B). Just over 50 percent of the lawsuits fall in five industries: Chemicals and Allied Products (SIC 28) with 13 percent, Electronics and Other Electronic Equipment (SIC 36) with 13 percent, Business Services (SIC 73) with 11 percent, Insurance Carriers (SIC 63) with 9 percent, and Measurement, Analysis, and Control Instruments (SIC 38) with 8 percent (Panel C).

V. EMPIRICAL ANALYSIS

Analysis of Class Action Complaints

Securities lawsuits must contain the specific statements alleged to be false or misleading and the reasons why those statements are false or misleading. Our initial inquiry identifies the communication channels from which the alleged misstatements are drawn. From the population of lawsuits with available data on CRSP, Compustat, First Call, and I/B/E/S, we review a random sample of 20. The sample lawsuits were filed between 2001 and 2008, with damage periods ranging from less than one month up to five years.

For each of the 20 randomly selected lawsuits, we obtain the reference complaint from the Stanford Securities Class Action Website (http://securities.stanford.edu/) and review the substantive allegations made by the plaintiffs. We categorize each alleged misstatement based on the type of communication in which that statement appeared, and summarize this review in Table 2.

The 20 complaints that we review cite a total of 294 communications, comprising earnings announcements, conference calls (both earnings announcement-related and stand-alone), press releases, media interviews, investor conferences, and SEC filings. Earnings announcements were cited most consistently, appearing in 18 of the 20 lawsuits. The majority of lawsuits also cite non-earnings announcement press releases (75 percent), 10-Qs (70 percent), earnings-related conference calls (60 percent), and 10-Ks (55 percent). Of the 294 communications, 108 (37 percent) were earnings-related, either the press release itself (80) or the associated conference call (28). SEC filings accounted for 75 (26 percent) of the cited communications, most frequently 10-Qs (51) and

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[24] For example, if pre-Reg FD claims rely on reports of private communications between analysts and the firm, we cannot characterize the type of information communicated, or the tone with which it was communicated. The consolidated amended class action complaint in *Rombach, et al. v. Family Golf Centers, Inc., et al.*, 355 F.3d 164 (2d Cir. 2004) features several pre-Reg FD claims of this type.

[25] The Woodruff-Sawyer database contains 877 lawsuits with damage periods beginning after the effective date of Reg FD. The SEC requirement that earnings announcements be filed on 8-Ks took effect on March 28, 2003. Therefore, 199 of these suits are excluded because the damage period ended prior to this requirement. An additional 330 lawsuits are eliminated based because they relate to excluded suit types (i.e., IPO allocations, earnings restatements, mergers and acquisitions, or options backdating). Our matching requirements combined with data availability constraints reduces the sample by exactly 50 percent, resulting in 165 lawsuits.

TABLE 1

Distribution of Lawsuits

Panel A: Distribution of Lawsuit Dates

Year of Suit Filing	Lawsuits	
2003	5	3%
2004	36	22%
2005	37	22%
2006	21	13%
2007	36	22%
2008	30	18%
Total	165	100%

Panel B: Distribution of the Length of the Damage Period (in six-month increments)

Number of Months	Lawsuits	
1–6	52	31%
7–12	44	27%
13–18	24	14%
19–24	16	10%
25–30	12	7%
31–36	0	0%
37–42	6	4%
43–48	1	1%
49–54	3	2%
55–60	7	4%
Total	165	100%

Panel C: Distribution of Lawsuits by Industry

Two-Digit SIC Code	Lawsuits	
28: Chemicals and Allied Products	22	13%
36: Electronics and Other Electronic Equipment	22	13%
73: Business Services	18	11%
63: Insurance Carriers	15	9%
38: Measurement, Analysis, and Control Instruments	14	8%
Industries representing less than 5 percent of lawsuits	74	45%
Total	165	100%

Panel A provides the distribution of the year in which the lawsuits were filed.
Panel B provides the distribution of the length of time (in months) that the damage periods extended.
Panel C provides a list of all industries, by two-digit SIC code, in which 5 percent or more of the lawsuits fall.

10-Ks (20). Of the remaining categories, non-earnings announcement press releases were by far the most frequent, accounting for 91 (31 percent) of the cited statements.

As noted in Table 2, 91 of the documents cited were press releases that were not earnings announcements, while 80 were earnings announcements. However, only 75 percent of the lawsuits cite at least one non-earnings press release, while 90 percent cite at least one earnings announcement. Three sued firms cause the distribution of non-earnings press releases to be skewed:

TABLE 2

Distribution of the Source Documents Cited in the Allegation Section of the Lawsuit

	Percent of Lawsuits Citing Document Category	Total Documents Cited	
Earnings Related			
Earnings announcement	90%	80	
Related conference call	60%	28	
Total EA		108	37%
SEC Filings			
10-Q	70%	51	
10-K	55%	20	
Other	20%	4	
Total SEC		75	26%
Other Cited Items			
Press release	75%	91	31%
Conference call	10%	3	1%
Investor conference	10%	2	<1%
Interview	35%	14	5%
Other	5%	1	<1%
Total Other		111	38%
Total Documents		294	100%

This table summarizes the documents cited in the allegations section of the lawsuit from the 20 lawsuits selected at random from all disclosure-related lawsuits with damage periods beginning after Regulation FD, excluding lawsuits related to IPO allocations, earnings restatements, mergers and acquisitions, or options backdating. The "Percent of Lawsuits" column indicates the percentage of the subsample that cited each document at least once. The "Total Documents Cited" columns tabulate the frequency with which each document category was cited.

EVCI Career Colleges, Pozen Inc., and Xethanol Corporation account for 42 percent (38/91) of the non-earnings press releases cited. Excluding these three lawsuits, earnings-related disclosures account for 41 percent of the cited statements, SEC filings account for 27 percent of the cited statements, and non-earnings press releases account for 23 percent of the cited statements.

Characteristics of the full sample substantiate the importance of earnings announcements in lawsuit filings. Over half of the lawsuits' damage periods begin on an earnings announcement date, suggesting that the earnings announcement (or earnings-related conference call) contained the first allegedly misleading statement in that complaint.

Overall, these analyses indicate that earnings announcements are an important (perhaps the most important) source of alleged misrepresentations. Based on the consistency and prevalence with which earnings announcements are cited in class action complaints, along with the availability of earnings announcements for potential control firms, we focus on earnings announcement disclosures in the remainder of our analyses.

Analysis of Quoted Language

Plaintiffs reveal the particular statements they view to be misleading by quoting those statements in the text of the lawsuits. When presenting the alleged misstatements, plaintiffs typically quote only a small portion of the disclosure in which those misstatements were made. In choosing to quote some statements, but not others, plaintiffs reveal the language they view as most favorable to their case. We use the plaintiffs' selections to infer the characteristics of the language that plaintiffs do (and do not) target. If plaintiffs target optimistic language and our dictionaries effectively capture optimism, then we expect *Optimism* to be significantly higher for the quoted portion than the non-quoted portion. This initial analysis is a joint test of the efficacy of the measures in our setting and the propensity for plaintiffs to cite optimistic language in their allegations.

For each of the 20 lawsuits comprising our initial analysis, we attempt to gather all of the earnings announcements that were specifically cited in the allegations section. We are able to obtain 78 of the 80 earnings announcements. We separately analyze the tone of the quoted statements and the tone of the remainder of the earnings announcements (i.e., the non-quoted portion of the disclosure). Table 3 presents the results of this analysis. The earnings announcements referenced in the complaints have a mean word count (excluding numerical terms) of 1,298 words. The allegations quote approximately one-quarter of the earnings announcement text.

Univariate tests reveal that statements quoted by plaintiffs in a class action complaint are significantly more optimistic than other language in the same document (i.e., the text not quoted in the complaint). Specifically, in Table 3, the quoted text has a mean and median *Optimism-Factor* greater than the non-quoted portion ($p < 0.01$). Moreover, the difference is pervasive—the quoted portion of the earnings announcement is more optimistic (based on *Optimism-Factor*) than the non-

TABLE 3

Lawsuit Subsample
Analysis of Quoted Language

		Components of Document		
	Full Document	**Quoted**	**Non-Quoted**	**p-values for Matched Pair Test of Differences**
n	78	78	78	
Word Count				
Mean	1,298	300	998	
Median	1,240	233	903	
Optimism-Diction				
Mean	0.11	1.34	−0.22	<0.01
Median	0.28	1.13	−0.13	<0.01
Optimism-Henry				
Mean	1.52	3.56	0.82	<0.01
Median	1.60	3.76	0.66	<0.01
Optimism-LM				
Mean	−1.38	−1.03	−1.48	0.06
Median	−1.24	−0.88	−1.34	<0.01
Optimism-Factor				
Mean	0.13	1.67	−0.35	<0.01
Median	0.15	1.90	−0.42	<0.01

This table shows the characteristics of all 78 earnings announcements cited in the subsample of 20 lawsuits summarized in Table 2. Optimism is measured separately for the full earnings announcement, the portion of the earnings announcement quoted in the lawsuit, and the text of the cited earnings announcement that was not quoted in the lawsuit. Variable definitions are in Appendix B. The p-values of the tests of differences in means are based on paired t-tests, clustered by firm. The p-values of tests of differences in the medians are for a matched-pair Wilcoxon signed-rank test.

quoted portion for 91 percent of the earnings announcements analyzed.[26] To our knowledge, this is the first concrete evidence for the intuition that plaintiffs target optimistic language when bringing actions against the firm.

Comparison of Sued and Non-Sued Firms

The prior analysis establishes that, conditional on bringing a lawsuit against the firm, the plaintiffs cite more optimistic language in their complaints. One plausible interpretation is that more optimistic disclosures lead to a higher probability of litigation. A more cynical view is that plaintiffs target any firm that experiences unexpectedly poor results and, with the benefit of hindsight, choose the most optimistic statements they can find and assert that the statements were misleading.

In order to distinguish between these two different perspectives, we incorporate a benchmark sample of similar firms that were not sued. As described earlier, each sued firm is matched to a non-sued firm in the same two-digit SIC code and size decile, with similar stock returns to the sued firm.

We obtain electronic copies of the earnings announcements falling within the sued firms' damage period (regardless of whether the announcement was cited in the lawsuit) and matched firms' pseudo-damage period. To facilitate the data collection process, we use directEDGAR to retrieve the earnings announcements from the SEC's EDGAR database, as filed on form 8-K.[27] This requirement limits our sample, as the SEC did not require firms to furnish a Form 8-K with their earnings announcements prior to 2003. After excluding firms due to poor matches and losing observations because of a lack of earnings announcements and other required data, our final sample includes 165 sued firms and their matches.

Table 4, Panel A provides univariate comparisons of the sued and matched firms' characteristics. Because we match firms on size prior to the damage period and returns across the damage period, it is not surprising that those variables (*Lag Size* and *Window Return*, respectively) are not significantly different across the sued and non-sued firms.

What is notable is that the two groups of firms are similar across many economic characteristics that are not part of our matching criteria. The two groups are statistically indistinguishable in terms of book-to-market ratios (*Lag Book-to-Market*), volatility (*Lag Volatility*), return on assets (*Lag Return on Assets*), earnings growth (*Lag Earnings Growth*), and the likelihood of incurring a loss (*Lag Loss Indicator*).[28] Sued firms experienced higher turnover (*Turnover*), had a more significant stock single-day price drop during the damage period (*Minimum Daily Return*), had higher sales growth (*Lag Sales Growth*) and moderately greater analyst following (*Lag Log Analysts*).

We obtain 628 earnings announcements for the 165 sued firms and 625 announcements for the 165 matched firms.[29] The characteristics of these earnings announcements are summarized in Panel B of Table 4. Again, the two groups of firms are similar across many economic attributes measured at the earnings-announcement level. They issue earnings announcement press releases of

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[26] Across the individual dictionaries, the quoted portion of the earnings announcement is more optimistic than the non-quoted portion for 86 percent, 91 percent, and 65 percent of the documents using the libraries from Diction, Henry (2008), and Loughran and McDonald (2011), respectively.

[27] Our particular search criteria was "filereasons/10/operations and *ex*99*," which limits the 8-Ks to those reporting on the results of operations. If the firm filed multiple earnings-related 8-Ks on an earnings announcement date, then we measure the characteristics of that earnings announcement as the weighted (by word count) average of the characteristics of the individual documents.

[28] We have also examined measures of management disclosure practices in the pre-damage period and find that management forecasts do not differ at the 10 percent level between the sued and matched firms on dimensions of quantity, horizon, forecast error, or forecast news.

[29] Although we match on the number of earnings announcements (per I/B/E/S), the variation in sample sizes is due to an inability to obtain all of those announcements from the EDGAR database.

TABLE 4

Descriptive Statistics for Sued and Non-Sued Firms

Panel A: Firm-Level Characteristics

	Sued Firms			Non-Sued Match Firms			p-values for Tests of Differences	
	n	Mean	Median	n	Mean	Median	Mean	Median
Measured during the Damage Period								
Window Return	165	−0.2243	−0.2329	165	−0.2106	−0.2168	0.72	0.76
Minimum Daily Return	165	−0.2364	−0.2153	165	−0.1523	−0.1113	<0.01	<0.01
Turnover	165	0.9340	0.9936	165	0.8703	0.9647	<0.01	<0.01
Abnormal Insider Trading	165	158.4099	0.0000	165	−42.8958	0.0000	0.75	0.80
Measured Prior to Damage Period								
Lag Size	165	21.6981	21.3506	165	21.4024	21.4274	0.11	0.40
Lag Book-to-Market	165	0.3719	0.2863	165	0.3924	0.3085	0.55	0.25
Lag Log Analysts	165	2.2861	2.3979	165	2.1615	2.1972	0.11	0.07
Lag Volatility	165	0.0287	0.0237	165	0.0268	0.0233	0.28	0.43
Lag Return on Assets	165	0.0111	0.0165	165	0.0095	0.0136	0.71	0.17
Lag Earnings Growth	165	0.0095	0.0043	165	0.0068	0.0023	0.54	0.10
Lag Sales Growth	165	0.2979	0.1873	165	0.1716	0.1247	<0.01	<0.01
Lag Loss Indicator	165	0.1636	0.0000	165	0.1818	0.0000		0.66

Panel B: Earnings-Announcement-Level Characteristics

	Sued Firms			Non-Sued Match Firms			p-values for Tests of Differences	
	n	Mean	Median	n	Mean	Median	Mean	Median
Log Forecasts	628	0.5565	0.6931	625	0.3897	0.0000	<0.01	<0.01
Log Word Count	628	7.7056	7.6384	625	7.7436	7.7011	0.23	0.17
Earnings Surprise	628	−0.0021	0.0004	625	−0.0016	0.0003	0.65	0.40
Return on Assets	628	0.0064	0.0127	625	0.0074	0.0119	0.67	0.29
Earnings Growth	628	0.0021	0.0014	625	0.0019	0.0008	0.92	0.33
Sales Growth	628	0.3066	0.1715	625	0.1565	0.0994	<0.01	<0.01
Loss Indicator	628	0.1975	0.0000	625	0.1984	0.0000		0.97
Optimism-Diction	628	0.1607	0.2341	625	−0.0197	0.0431	<0.01	<0.01
Optimism-Henry	628	1.3435	1.2704	625	1.2839	1.1912	0.24	0.06
Optimism-LM	628	−1.3056	−1.0821	625	−1.5027	−1.3394	<0.01	<0.01
Optimism-Factor	628	0.0897	0.1647	625	−0.0987	−0.0362	<0.01	<0.01

This table shows means and medians of the independent variables for a sample of 165 sued and non-sued matched firms. Matched firms were chosen from the same two-digit SIC code and size decile based on stock performance. Stock performance was measured for sued firms from the earnings announcement immediately prior to the damage period to the earnings announcement immediately following the damage period, and for matched firms over the same number of earnings announcements in close calendar proximity. Variable definitions are in Appendix B. The p-values of the tests of differences in means are based on t-tests. The p-values of tests of differences in the medians are for a two-sided Wilcoxon rank-sum test. All firm-level tests are paired. For binary variables, p-values are for a χ^2 test.

approximately the same length (*Log Word Count*), and they experience similar earnings surprises (*Earnings Surprise*). They also exhibit comparable return on assets, earnings growth, and loss incidence (*Return on Assets*, *Earnings Growth*, and *Loss Indicator*, respectively). Sued firms issue more forecasts (*Log Forecasts*) and exhibit higher sales growth (*Sales Growth*) than their matched firms.

To quantify the level of optimism in each of the earnings announcements, we use scores based on the three libraries discussed earlier, as well as the composite factor score. For three of the four measures, sued firms' earnings announcements are more optimistic than non-sued firms during a comparable period (statistically significant at the 5 percent level), regardless of whether those earnings announcements were actually cited in the plaintiff complaint. The fourth measure, *Optimism-Henry*, is marginally higher for sued firms relative to matched firms ($p = 0.06$ for the difference in medians, 0.24 for the difference in means). Overall, the univariate comparisons suggest that sued firms issue more optimistic earnings announcements than do economically comparable non-sued firms.

For our multivariate analysis, we use a conditional maximum likelihood model with a dependent variable equal to 1 for sued firms and 0 for matched firms. Specifically, we use the conditional logistic regression model, which takes into account pair-matching to provide consistent coefficients for a sample matched on the dependent variable (i.e., the initiation of a class action lawsuit).[30] The conditional logit calculates likelihood relative to each group (i.e., within each sued firm and its matched firm) and avoids the problem of disproportionate sampling that occurs when a sample is matched based on the dependent variable. In our case, disproportionate sampling occurs because our sample rate of litigation incidence is far higher than the rate we observe for the global population of firms.

Our particular regression models the dichotomous variable (sued/not sued) as a function of optimistic tone and the control variables mentioned earlier. Table 5 documents the regression results. We find that the tone of the document is a significant predictor of class action litigation, in both a statistical and an economic sense. Specifically, *Optimism-Factor* has a significantly positive coefficient of 0.5646 ($p < 0.01$). In terms of economic magnitude, a one standard deviation increase in *Optimism-Factor* increases the odds of being sued by a factor of 1.759.[31] These results are in accord with the univariate results presented earlier.

We also find that firms issuing more discretionary disclosure in the form of management forecasts have a greater propensity to be sued—the coefficient on *Log Forecasts* is positive and significant ($p < 0.01$).[32] This result is consistent with Rogers and Van Buskirk (2009). Specifically, they show that managers reduce their level of disclosure (including forecasts) after being sued, presumably after gaining a better understanding of the particular disclosure behavior that puts them at risk.

Several of the remaining control variables are significantly related to litigation. In particular, sales growth (*Sales Growth*), which is measured at the earnings-announcement level, is significantly associated with the likelihood of being sued. Consistent with expectations,

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[30] For further discussion of the conditional logistic model, see Hosmer and Lemeshow (2000) or Cram et al. (2009).

[31] Across the individual dictionaries, a one standard deviation increase in *Optimism* increases the odds of being sued by a factor of 1.676, 1.325, and 1.644 using the libraries from Diction, Henry (2008), and Loughran and McDonald (2011), respectively.

[32] To ensure that our results are not driven by forecast characteristics, we repeat our analysis including forecast news (i.e., manager's forecasted earnings minus consensus analyst expectation, scaled by stock price) and forecast error (i.e., actual earnings minus manager's forecasted earnings, scaled by stock price). The variables are set equal to 0 for firms without forecasts in a given period. Our results are unaffected by the inclusion of these two variables.

TABLE 5
Litigation Conditional Logit

	Diction		Henry		LM		Factor	
	Coefficient	z-stat	Coefficient	z-stat	Coefficient	z-stat	Coefficient	z-stat
Optimism	0.5164***	3.61	0.2817**	2.18	0.4973***	3.30	0.5646***	3.95
Log Forecasts	0.9344***	4.56	0.8930***	4.42	0.9348***	4.56	0.9196***	4.49
Log Word Count	−0.2560	−1.04	−0.1893	−0.76	−0.1591	−0.64	−0.1799	−0.73
Earnings Surprise	−6.1670	−1.24	−5.7586	−1.14	−6.7487	−1.38	−6.5756	−1.34
Return on Assets	3.1236	0.61	3.8405	0.76	3.2969	0.63	3.2835	0.64
Earnings Growth	−6.9888*	−1.86	−8.3502**	−2.25	−6.8065*	−1.79	−7.5527**	−2.02
Sales Growth	0.6957***	2.87	0.7302***	2.99	0.7430***	2.98	0.6606***	2.74
Loss Indicator	0.4652	1.29	0.2502	0.72	0.4922	1.35	0.5220	1.44
Window Return	−33.0750***	−5.35	−33.2661***	−5.51	−30.9787***	−5.02	−32.8220***	−5.33
Minimum Daily Return	−40.1783***	−8.66	−38.4807***	−8.45	−38.1368***	−8.21	−40.0135***	−8.58
Minimum Daily Return^2	−41.4873***	−6.17	−38.8847***	−5.85	−39.5293***	−5.77	−41.1961***	−6.06
Turnover	15.2550***	5.74	15.4560***	5.84	15.1002***	5.89	15.6432***	5.82
Abnormal Insider Trading[a]	0.0257	1.60	0.0261*	1.65	0.0240	1.53	0.0254	1.60
Lag Size	2.7085***	11.23	2.7074***	11.33	2.7508***	11.37	2.7638***	11.30
Lag Book-to-Market	0.3308	0.73	0.4071	0.91	0.6229	1.38	0.4378	0.97
Lag Log Analysts	−0.1962	−0.72	−0.2290	−0.85	−0.3280	−1.19	−0.1971	−0.72
Lag Volatility	26.2511**	2.09	17.8098	1.46	22.7690*	1.86	24.2596**	1.95
Lag Return on Assets	−19.5828***	−3.28	−19.8218***	−3.27	−18.5749***	−3.07	−19.9993***	−3.32
Lag Earnings Growth	8.8551**	2.40	7.6370**	2.08	7.9606**	2.19	9.1197***	2.47
Lag Sales Growth	1.5199***	2.61	1.6023***	2.88	1.6829***	2.96	1.5506***	2.72
Lag Loss Indicator	−0.6540	−1.25	−0.7669	−1.46	−0.7570	−1.44	−0.6930	−1.31
No. Observations	1,253		1,253		1,253		1,253	
Likelihood Ratio	659.07		650.57		656.91		661.91	
McFadden's R^2	50.7%		50.1%		50.6%		51.0%	

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed).

[a] Indicates coefficients have been multiplied by 10^3 for expositional purposes.

This conditional logit of the propensity for being sued is measured over a pool of 628 observations from 165 sued firms and 625 observations from 165 matched firms, each observation representing an individual earnings announcement. *Optimism* is based on the word lists obtained from Diction 6.0 in the first column, Henry (2008) in the second, LM (Loughran and McDonald 2011) in the third, and the Factor score of all three in the final column. Variable definitions are in Appendix B.

poorer stock performance (*Window Return*) during the damage period (or pseudo-damage period), the largest one-day price decline (*Minimum Daily Return*), and share turnover (*Turnover*) are significantly associated with the likelihood of being sued. Finally, larger firms (*Lag Size*) and firms with greater share price volatility (*Lag Volatility*) have a greater propensity to be sued.

Additional Analysis—Influence of Large One-Day Stock Price Drops

As discussed earlier, large one-day stock price drops help to establish two components of litigation: materiality and loss causation. The univariate statistics in Table 4 demonstrate that the sample of sued firms, on average, have larger one-day stock price drops than the non-sued firms. In addition to including both a linear and a squared term in the primary regression analysis, we take an additional step to ensure that our results are not driven by differences in the distribution of this variable.

Specifically, Table 6 documents the results from layering on an additional constraint to our matching criteria by eliminating from our analysis any pair (sued firm and its non-sued counterpart) for which the *Minimum Daily Return* differs by more than 10 percent.[33] Despite the substantial decline from 165 firm-pairs to 85 and from 1,253 observations to 684, *Optimism-Factor* remains significantly associated with the likelihood of being sued ($p < 0.01$).

VI. THE ROLE OF INSIDER TRADING

Abnormally high insider sales increase the risk of being sued, as documented in prior studies (e.g., Johnson et al. 2007). This relation is not because plaintiffs are pleading a claim for "insider trading," but rather because insider sales are typically used to show managerial intent to mislead (see Eth and Dicke 1994, 103–107). To assess the joint effect of insider sales and optimistic disclosures, we perform two sets of analyses. First, we interact these two variables and add the interaction to the main regression shown in Table 5. Table 7, Panel A shows the results of this regression.

In each of the four regression specifications in Table 7, Panel A, the *Optimism* main effect remains significant at $p < 0.01$. In three of the four regression specifications, including the optimism factor score, the newly introduced interaction term is positively associated with litigation risk. Using the LM dictionary yields an interaction term that is positive, but only weakly statistically significant ($p = 0.11$). (As we mentioned earlier, since Loughran and McDonald [2011] focus on negative words, it is not surprising that we obtain weaker results using this dictionary.)

To further assess the joint effect of insider sales and optimistic disclosure, Table 7, Panel B presents an alternative specification in which we allow the optimism and insider trading metrics to vary with one another. In the first column, we create two variables based on our original *Optimism* variable: *Optimism (Abnormal Insider Sell)* for firms experiencing negative abnormal insider trading during the period, and *Optimism (Abnormal Insider Buy or Hold)* for firms experiencing either zero or positive abnormal insider trading during the period. In the second column, we create two variables based on our original *Abnormal Insider Trading* variable: *Abnormal Insider Trading (High Optimism)* for firms with above-median measured optimism, and *Abnormal Insider Trading (Low Optimism)* for firms with below-median optimism. For brevity, we present only the results using the optimism factor score.

The results in the first column of Table 7, Panel B indicate that *Optimism* is positively and significantly associated with lawsuit incidence, regardless of whether the firm's managers engaged

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[33] After this restriction, the sued and non-sued firms' *Minimum Daily Return* are not statistically different at the 5 percent level for either the mean or the median.

TABLE 6

Sample Limited to Pairs Where Sued and Matched Minimum Daily Returns Are Within 10 Percent

	Diction		Henry		LM		Factor	
	Coefficient	z-stat	Coefficient	z-stat	Coefficient	z-stat	Coefficient	z-stat
Optimism	0.8233***	4.22	0.1964	1.23	0.8510***	3.94	0.8031***	4.11
Log Forecasts	0.8527***	3.45	0.7769***	3.19	0.8851***	3.58	0.8030***	3.27
Log Word Count	−0.4529	−1.52	−0.4675	−1.51	−0.2809	−0.92	−0.3272	−1.09
Earnings Surprise	−9.8371	−1.37	−8.0299	−1.04	−12.9060*	−1.73	−10.5799	−1.45
Return on Assets	8.8003	1.16	6.7751	0.90	9.5178	1.22	9.0355	1.19
Earnings Growth	−6.5987	−1.18	−7.8995	−1.44	−6.5648	−1.16	−8.6377	−1.55
Sales Growth	0.4304	0.88	0.4125	0.88	0.3401	0.70	0.2465	0.51
Loss Indicator	1.6921***	3.25	1.2015**	2.41	1.6830***	3.20	1.6450***	3.18
Window Return	−44.2432***	−5.97	−41.3129***	−6.10	−39.0460***	−5.55	−43.1108***	−6.06
Minimum Daily Return	−21.7447*	−1.80	−26.4677**	−2.20	−27.4430**	−2.31	−22.7508*	−1.92
Minimum Daily Return^2	20.4535	0.62	2.8362	0.09	7.1922	0.22	22.6688	0.70
Turnover	15.2195***	4.82	14.5749***	4.82	13.8625***	4.64	15.2160***	4.97
Abnormal Insider Trading^a	0.0005	0.03	−0.0001	−0.01	−0.0047	−0.24	0.0000	0.00
Lag Size	2.3114***	7.51	2.2364***	7.42	2.3834***	7.80	2.3319***	7.51
Lag Book-to-Market	0.8611	1.37	0.9076	1.46	1.6361***	2.56	1.1263*	1.79
Lag Log Analysts	0.4998	1.42	0.3981	1.16	0.2335	0.67	0.4684	1.35
Lag Volatility	−7.9684	−0.43	−26.1506	−1.48	−15.5486	−0.87	−14.3800	−0.79
Lag Return on Assets	0.2525	0.02	6.1160	0.60	2.1283	0.20	−1.9450	−0.19
Lag Earnings Growth	7.8994	1.56	1.8626	0.38	4.3839	0.90	8.0289	1.57
Lag Sales Growth	2.1108***	2.82	2.4719***	3.39	2.5754***	3.40	2.2417***	2.98
Lag Loss Indicator	1.1542	1.46	1.0929	1.38	1.0703	1.33	0.9411	1.18
No. Observations	684		684		684		684	
Likelihood Ratio	278.11		260.60		275.39		276.99	
McFadden's R^2	38.8%		36.4%		38.5%		38.7%	

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*, **, *** Indicates significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed).

[a] Indicates coefficients have been multiplied by 10^3 for expositional purposes.

This table includes the conditional logit of the propensity for being sued over only the 85 pairs of sued and matched firms for which the *Minimum Daily Return* of the matched firm is within 10 percent of the sued firm. This results in a pool of 345 observations from the 85 sued firms and 339 observations from the 85 matched firms, each observation representing an individual earnings announcement. *Optimism* is based on the word lists obtained from Diction 6.0 in the first column, Henry (2008) in the second, LM (Loughran and McDonald 2011) in the third, and the factor score of all three in the final column. Variable definitions are in Appendix B.

TABLE 7
Insider Trading and Disclosure Tone

Panel A: Conditional Logit Including the Interaction between *Optimism* and *Abnormal Insider Trading*

	Diction		Henry		LM		Factor	
	Coefficient	**z-stat**	**Coefficient**	**z-stat**	**Coefficient**	**z-stat**	**Coefficient**	**z-stat**
Optimism	0.5367***	3.72	0.3974***	2.92	0.4861***	3.21	0.6068***	4.14
*Optimism * Abnormal Insider Trading*[a]	0.0318**	2.02	0.0649***	3.23	0.0254	1.60	0.0459***	2.75
Log Forecasts	0.9297***	4.55	0.9781***	4.77	0.9683***	4.70	0.9657***	4.69
Log Word Count	−0.2807	−1.14	−0.2179	−0.86	−0.2040	−0.82	−0.2393	−0.97
Earnings Surprise	−6.1477	−1.23	−6.9141	−1.33	−7.2204	−1.45	−7.3077	−1.46
Return on Assets	3.7003	0.71	5.1157	1.00	3.8517	0.73	4.3204	0.83
Earnings Growth	−7.2922*	−1.92	−8.9843**	−2.41	−7.1565*	−1.87	−7.9988**	−2.11
Sales Growth	0.7111***	2.88	0.7420***	3.00	0.7610***	3.03	0.6840***	2.78
Loss Indicator	0.5002	1.37	0.3137	0.88	0.4786	1.30	0.5612	1.51
Window Return	−32.7314***	−5.30	−34.1404***	−5.61	−32.3332***	−5.20	−33.5111***	−5.47
Minimum Daily Return	−40.7226***	−8.70	−38.3444***	−8.48	−37.0198***	−7.90	−39.3597***	−8.44
Minimum Daily Return^2	−42.0611***	−6.22	−38.2436***	−5.79	−37.9039***	−5.47	−40.0845***	−5.88
Turnover	15.6284***	5.76	15.5100***	5.83	15.3102***	5.96	15.9631***	5.85
Abnormal Insider Trading[a]	0.0183	1.10	−0.0621**	−1.98	0.0533**	2.20	0.0157	0.96
Lag Size	2.7472***	11.24	2.8082***	11.37	2.7971***	11.40	2.8415***	11.37
Lag Book-to-Market	0.3492	0.77	0.4927	1.09	0.6830	1.50	0.5440	1.18
Lag Log Analysts	−0.2327	−0.85	−0.2253	−0.83	−0.3649	−1.32	−0.2474	−0.90
Lag Volatility	22.7584*	1.80	18.4871	1.50	21.6140*	1.74	22.0701*	1.75
Lag Return on Assets	−20.7849***	3.44	−22.7773***	−3.69	−19.4282***	−3.18	−22.1159***	−3.62
Lag Earnings Growth	8.4070**	2.29	7.9126**	2.16	8.0348**	2.20	9.0442***	2.45
Lag Sales Growth	1.5301***	2.61	1.6428***	2.97	1.5877***	2.79	1.5104***	2.65
Lag Loss Indicator	−0.7827	−1.48	−0.9076*	−1.71	−0.8934*	−1.67	−0.9133*	−1.70
No. Observations	1,253		1,253		1,253		1,253	
Likelihood Ratio	663.24		661.37		659.49		669.85	
McFadden's R^2	51.1%		50.9%		50.8%		51.6%	

(continued on next page)

TABLE 7 (continued)

Panel B: Conditional Logit Allowing *Optimism* and *Abnormal Insider Trading* to Vary with One Another

	Factor		Factor	
	Coefficient	**z-stat**	**Coefficient**	**z-stat**
Optimism			0.5740***	4.00
Optimism (Abnormal Insider Sell)	1.2612***	5.26		
Optimism (Abnormal Insider Buy or *Hold)*	0.2809*	1.74		
Log Forecasts	0.9816***	4.77	0.9241***	4.52
Log Word Count	−0.2535	−1.02	−0.2103	−0.85
Earnings Surprise	−6.4945	−1.28	−6.8427	−1.38
Return on Assets	3.8632	0.74	3.7354	0.72
Earnings Growth	−8.2183**	−2.16	−7.5840**	−2.03
Sales Growth	0.7292***	2.88	0.5388	1.48
Loss Indicator	0.4901	1.33	0.6566***	2.72
Window Return	−33.2777***	−5.49	−32.7122***	−5.33
Minimum Daily Return	−39.6883***	−8.57	−39.2794***	−8.37
Minimum Daily Return^2	−40.3836***	−5.96	−40.1191***	−5.85
Turnover	15.8915***	5.86	15.7002***	5.84
Abnormal Insider Trading[a]	0.0128	0.78		
Abnormal Insider Trading (High Optimism)[a]			0.0401**	1.97
Abnormal Insider Trading (Low Optimism)[a]			0.0060	0.26
Lag Size	2.9125***	11.55	2.8010***	11.29
Lag Book-to-Market	0.7276	1.59	0.5226	1.13
Lag Log Analysts	−0.2538	−0.92	−0.2178	−0.79
Lag Volatility	22.7995*	1.83	24.3421**	1.94
Lag Return on Assets	−22.3656***	−3.71	−20.9019***	−3.44
Lag Earnings Growth	8.8644**	2.44	9.4283***	2.54
Lag Sales Growth	1.6610***	2.83	1.5455***	2.72
Lag Loss Indicator	−0.8670*	−1.66	−0.7663	−1.43

(continued on next page)

TABLE 7 (continued)

	Factor		Factor	
	Coefficient	**z-stat**	**Coefficient**	**z-stat**
p-values from tests of Coefficients				
Optimism (Abnormal Insider Sell versus *Buy/Hold)*	0.00			
Abnormal Insider Trading (High versus *Low Optimism)*			0.25	
No. Observations	1,253		1,253	
Likelihood Ratio	677.26		663.26	
McFadden's R^2	52.1%		51.1%	

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*, **, *** Indicates significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed).

[a] Indicates coefficients have been multiplied by 10^3 for expositional purposes.

This table provides evidence on the interaction between abnormal insider trading and disclosure tone. Panel A provides the conditional logit of the propensity for being sued on all variables from Table 5 plus the interaction between *Abnormal Insider Trading* and *Optimism*. Panel B provides the conditional logit from Table 5, but allows the *Optimism* and *Abnormal Insider Trading* variables to vary with one another. *Optimism* is based on the word lists obtained from Diction 6.0 in the first column, Henry (2008) in the second, LM (Loughran and McDonald 2011) in the third, and the factor score of all three in the final column. Variable definitions are in Appendix B.

in significant selling. That said, the relation between optimism and litigation is approximately four times larger for situations with abnormal insider sales than for those without (the coefficients are significantly different at $p < 0.01$). In contrast, the second column shows that insider trading is only associated with litigation for those firms issuing optimistic disclosures. These results indicate that optimistic language is associated with litigation risk, even in the absence of abnormal insider selling, while abnormal insider selling is a meaningful predictor of litigation only when that selling is accompanied by unusually optimistic disclosure tone.

VII. CONCLUSION

We study the tone of earnings announcements issued by firms sued in disclosure-related litigation, with the goal of identifying whether optimistic disclosures are associated with shareholder litigation. We contribute several findings to the existing literature. First, while class action complaints cite a broad variety of communications, earnings announcements appear to be the most consistently cited source of alleged misstatements. Second, the tone of the statements quoted in the class action complaints is significantly more optimistic than the tone of the non-quoted portion of the cited documents, suggesting that optimistic language is a target for plaintiff attorneys. Third, the tone of earnings announcements issued by sued firms during the damage period is more optimistic than the tone of earnings announcements issued during a comparable period by non-sued firms from the same industry and with similar economic performance. Finally, optimistic language is associated with greater litigation risk regardless of the level of insider selling; insider selling is associated with litigation risk only when the firm's disclosures are optimistic.

The implications of our results should be of interest to both managers and regulators. Because firms are unlikely to end the practice of issuing earnings announcements, managers will not be able to reduce litigation risk by eliminating this category of disclosure even though it tends to put the firm at risk—earnings announcements will continue to be scrutinized by potential plaintiffs. However, our evidence suggests that managers can reduce litigation risk by dampening the tone of their earnings announcements either by decreasing their use of positive language or by tempering their optimism with statements that are less favorable.[34] Our results also suggest that, in addition to employing restricted trading periods and 10b5-1 plans, firms could reduce litigation risk by ensuring that managers' trading actions are consistent with their public disclosures.

From a regulatory perspective, these results contribute to the longstanding debate about the merits of shareholder litigation. While our study is not aimed at showing whether managers of sued firms intentionally or recklessly mislead investors with overly optimistic statements, our results indicate that sued firms' disclosures are consistently *more* optimistic than those of non-sued firms in similar circumstances, in accord with the typical plaintiff allegation.

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[34] To be clear, we acknowledge that there are likely to be other costs and benefits to providing optimistic disclosure. However, our results suggest that if managers are interested in reducing litigation risk, then dampening the disclosure tone is one tool at their disposal.

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APPENDIX A
Example Words from Each of the Linguistic Dictionaries

Panel A: Examples of *Optimistic* Words Contained in Individual Dictionaries and Common to All Dictionaries

Dictionary		
Diction Only	**Henry Only**	**All**
Excited	Accomplish	Better
Favorable	Achieve	Excellent
Impressive	Improved	Pleased
Superior	Strengthening	Strong
Thrilled	Successfully	Successful

Panel B: Examples of *Pessimistic* Words Contained in Individual Dictionaries and Common to All Dictionaries

Dictionary			
Diction Only	**Henry Only**	**LM Only**	**All**
Awful	Below	Damaging	Deteriorating
Dismayed	Down	Dismal	Disappointing
Pessimistic	Less	Flawed	Failure
Struggling	Shrinking	Underperforming	Weak
Terrible	Slump	Worsened	Worst

APPENDIX B

Variable Definitions

This appendix defines each variable and when it is measured, relative to the timing of the lawsuit's "damage period" and the "matching period" used to identify the non-sued firm for each sued firm in the sample. The lawsuit damage period is specified in the plaintiff's complaint and represents the period during which the firm is alleged to have misled investors. The matching period begins on the last earnings announcement prior to the beginning of the damage period and ends on the first earnings announcement following the damage period.

Earnings-Level Variables

Earnings-level variables are measured at each earnings announcement occurring during the sued firm's damage period or the matched firm's quasi-damage period. Each variable takes on a unique value for each earnings announcement during the damage period.

Optimism = a count of words, as defined by the respective dictionary, as a percent of total words, multiplied by 100;
Log Forecasts = natural logarithm of 1 plus the number of management forecasts issued during the period between the current and prior earnings announcement;
Log Word Count = natural logarithm of the earnings announcement word count;
Earnings Surprise = reported earnings minus the mean I/B/E/S estimate, scaled by stock price;
Return on Assets = quarterly income before extraordinary items, scaled by total assets;

Earnings Growth = change in quarterly income before extraordinary items relative to the same quarter of the previous year, scaled by total assets;
Sales Growth = percentage growth in quarterly sales revenue relative to the same quarter of the previous year; and
Loss Indicator = 1 if net income for the quarter is less than zero.

Window-Level Variables

Window-level variables are measured over the matching window for sued firms and quasi-matching period for the non-sued firms (i.e., the period beginning with the last earnings announcement prior to the start of the period and ending with the first earnings announcement after the end of the period). Each variable takes on a single value for all earnings announcements during the period.

Window Return = cumulative stock return during the window used to identify the matched firms (i.e., from the earnings announcement immediately prior to the beginning of the damage period to the earnings announcement ending or immediately following the end of the damage period);
Minimum Daily Return = smallest one-day return during the damage period;
Turnover = $1 - (1 - \text{average daily turnover})^{x}$. Average daily turnover equals the average daily trading volume divided by the number of shares outstanding. X is equal to the number of trading days in the damage window; and
Abnormal Insider Trading = sign-preserving square root of abnormal insider trading (in dollars). Abnormal insider trading equals shares purchased less shares sold during the damage period less the same measure for an equal length period prior to the damage period. We then take the square root of the absolute value of this net trading volume. For net purchases, we multiply this value by -1 so that positive values represent net selling and negative values represent net purchasing.

Firm-Level Variables

Firm-level variables are measured immediately prior to the matching and quasi-matching window. Each variable takes on a single value for the firm during the damage period.

Lag Size = natural logarithm of equity market value;
Lag Book-to-Market = ratio of book value of equity to market value of equity;
Lag Log Analysts = natural logarithm of 1 plus the number of analysts following the firm;
Lag Volatility = standard deviation of daily stock returns, measured over a 365-day period;
Lag Return on Assets = quarterly income before extraordinary items, scaled by total assets;
Lag Earnings Growth = change in quarterly income before extraordinary items relative to the same quarter of the previous year, scaled by total assets;
Lag Sales Growth = percentage growth in quarterly sales revenue relative to the same quarter of the previous year; and
Lag Loss Indicator = 1 if net income for the quarter is less than zero.

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BOOK REVIEWS

Stephen A. Zeff, Editor

Editor's note: Two copies of books for review should be sent to the Book Review Editor: Stephen A. Zeff, Rice University, Jesse H. Jones Graduate School of Business, 6100 Main St., Houston, TX 77005. The policy of *The Accounting Review* is to publish only those reviews solicited by the Book Review Editor. Unsolicited reviews will not be accepted.

MARY ADAMS and MICHAEL OLEKSAK, *Intangible Capital: Putting Knowledge to Work in the 21st-Century Organization* (Santa Barbara, CA: Praeger, 2010, ISBN 978-0-313-38074-7, pp. xvii, 171).

The authors, former bankers turned intangible-capital (IC) consultants, outline the current state of IC and suggest ways in which companies can manage it to create long-term customer and shareholder value. The book is divided into three major sections—"The New Factory," "The New Management," and "The New Accounting."

"The New Factory" section explains how knowledge is central to an organization's ability to create value for its customers and for its shareholders, if customers are willing to pay for the value created for them. The overriding message is that a company's future depends on what it knows rather than on what it owns. Adams and Oleksak classify business knowledge into three components—human capital (employees, core competencies, experience, attitude, management), relationship capital (customers, partners, brands, reputation), and structural capital (culture, organizational knowledge, intellectual property, standardized processes). Unlike human capital, structural capital does not walk out the door at night, but remains with the company after employees go home. "The New Factory" section of the book ends with Chapter 3, in which the authors offer an approach to converting knowledge assets, or what they call "the IC factory," into a value creation system.

The second section of the book—"The New Management"—attempts to answer four essential questions:

- How does work get done in the knowledge enterprise?
- What is the role of the manager?
- Why is innovation so important today?
- How can you plan for innovation when the outcome is unknown?

Corporate managers will likely find the most relevant and actionable ideas for shaping the planning and execution process in this section of the book. The authors demonstrate how network analysis can serve as a powerful tool for identifying how work gets done in an organization. Accountability is established when the network maps are created by the people responsible for the work that is being mapped. The recommended roles of the manager—growing people, providing required resources, facilitating learning, and setting standards—require the modern organization to delicately balance between top-down and bottom-up approaches to decision making. Innovation, defined as "the creation of substantial new value for customers and the firm by creatively changing one or more dimensions of the business system" (p. 80), is more critical than ever. Chapter 6 outlines how companies can tap their human, relationship, and structural capital to leverage innovation potential.

In the third and final section, "The New Accounting," the authors offer a number of approaches for developing the information needed to manage the IC factory. They begin with the all-too-familiar claims that "[n]o one really knows how much is being spent on intangible capital expenditures . . . by American companies to build their knowledge infrastructure" (p. 91), and that IC expenditures, for the most part, are expensed and consequently do not appear on the balance sheet. While accounting scholars are actively pursuing the difficult research challenge posed by the identification, valuation, and reporting of IC expenditures, they are unlikely to find helpful insights here. After presenting discounted cash flow, fair value, and value creation approaches to valuing intangibles, the authors sensibly conclude that because future benefits are, at best, highly uncertain, financial metrics will not get the job done. They then turn to nonfinancial metrics.

It is unclear whether the authors' recommendations apply solely to internal managerial analysis or to external corporate reporting as well. In any event, the nonfinancial indicators are intended to track the progression of the company's value creation mission. Specifically, the authors recommend that companies prepare a comprehensive listing of all IC (human, relationship, and structural) expenditures and then calculate ratios that serve to show the relative importance of IC expenditures, e.g., intangible capital expenditures/tangible capital expenditures.

Using nonfinancial indicators, commonly referred to as Key Performance Indicators (KPIs), to evaluate performance and reward managers is commonplace among publicly traded companies. Here is the problem. Based on field research in 60 companies and survey responses from 297 senior executives, Ittner and Larcker (2003) find that most companies fail to identify appropriate nonfinancial measures. A majority of firms do not investigate the plausible relationships between nonfinancial measures and value creation. Companies that develop causal models rarely examine whether the chosen nonfinancial measures actually contribute to sustainable financial results and shareholder value. This section of the book could have benefited considerably from a discussion of how to identify nonfinancial measures that link closely to long-term value creation.

In summary, this well-organized and well-written book will appeal primarily to professional managers and those looking for an overview of the current state of thinking about intangible capital.

REFERENCE

Ittner, C., and D. Larcker. 2003. Coming up short on nonfinancial performance measurement. *Harvard Business Review* 81 (11): 88–95.

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ALNOOR BHIMANI and MICHAEL BROMWICH, *Management Accounting: Retrospect and Prospect* (Kidlington, Oxford, U.K.: CIMA/Elsevier, 2010, ISBN 978-1-85617-905-8, pp. xxii, 122).

This book is the third in a series of books written by Michael Bromwich and Al Bhimani from the London School of Economics, and was commissioned by the Chartered Institute of Management Accountants (CIMA) to celebrate its 90th anniversary. The two earlier books were also published by CIMA and were *Management Accounting: Evolution not Revolution* (1989), and *Management Accounting: Pathways to Progress* (1994). This third book expands on some of the matters covered in the two earlier books, but takes the discussion further to consider the likely changes to the management accountant's role and management accounting practice as a response to recent significant changes in the business environment. These changes include the global financial crisis, the accelerating globalization of business and, in particular, technological change and advances.

The intended audience for the book is not specified, but I assume it is aimed at a broad audience that would include accountants in practice, including members of the sponsoring publisher, CIMA, as well as management accounting researchers. The book draws on published research that is more of an applied nature. It is not research- or theory-driven, and this is not the intended purpose of the book. Rather, it reflects on where management accounting is today and where it has come from, and the authors focus on emerging trends in the global business environment and the challenges these present for management accountants and for management accounting practice.

The book consists of five chapters. The first chapter, "Management Accounting: Past and Present," provides a chronology of the development of cost accounting into management accounting, and outlines the new management accounting techniques that emerged in the late twentieth century, such as activity-based costing (ABC), value management, and the balanced scorecard (BSC). The history starts in 1919, which is the year of the founding of the Institute of Cost and Works Accountants, which eventually became CIMA. The chapter also outlines the recent trend of "reengineering the finance function," and reviews the changing role of accountants in organizations as business partners. The role of accountants as business partners is a recurring subject throughout the book, and the authors believe that this is a natural outgrowth for accountants that is necessary for gaining a better understanding of enterprise technology and marketing strategy, and is a key to the profession's survival and continued growth. The authors note the paucity of recent research on the extent of adoption and implementation of modern management accounting techniques, but they draw on what is available. They conclude that many accounting innovations have taken time to be adopted, with the lag of techniques such as ABC and BSC being up to ten years. However, the lag varies widely across industries.

The second chapter, titled "Costs: Modern, Future and Strategic," provides an exposition of different cost concepts for decision making, using an economic point of view. The types of costs that are outlined are those that would be familiar to most of the accounting audience, and include opportunity costs, variable costs, fixed costs, sunk costs, joint costs, and incremental and avoidable costs. The remainder of the chapter focuses on technological change and the impact on management accountants and costs and, hence, on the work of management accountants. Economic concepts of economies of scale and scope and portfolio effect are also covered. The authors see an understanding of technology by management accountants as a major challenge if they are to be accepted as business partners. Technological change and the opportunities it creates for organizations and for accountants is a unifying theme throughout the book. The adoption of techniques that are collectively called strategic management accounting (SMA) is taken up in the last section of this chapter. While this chapter provides an interesting refresher of the underlying building blocks of costs, I was uncertain of its positioning between Chapters 1 and 3, and felt that the cost material disrupted the flow of ideas that were developing across the book. This material could have been included in an appendix. I also wondered why the SMA section was not included in Chapter 1.

Chapter 3, "Flexible Technologies, Fluid Organisations and Digitisation," covers the intriguing area of fluid organizational structures and technologies and highlights their implications for management accounting. A fluid organization is one that is free from most physical asset investments and has arisen with developments in digitization and network centricity. With the help of technologies, this enables organizations to have extreme flexibility and to reconfigure again and again to access new markets, products, customer segments, and economic opportunities. The authors explain the implications of these developments for cost management, as organizations can alter their cost structures (proportions of fixed and variable costs) within short time frames, and adopt new production technologies and engage in real-time product shifts. The authors argue that with the adoption of flexibility and fluidity, organizations become more knowledge management-oriented; so performance assessment is more focused on return on people, rather than on return on capital. For management accounting, this suggests the need for new approaches to control. Functional demarcations will start to disappear, and the boundaries of management accounting may need to be redefined.

"Cost Co-creation and Globalisation" is the title of Chapter 4, and the focus here, again, is on the changing nature of organizations and the opportunities offered by new technologies. The role of the customer in product creation—or in co-creation—is a particular focus in this chapter, and reference is made to extreme examples of organizations where the customers create the product that they consume. Consider Wikipedia and Facebook. There is an interesting discussion of the outcome of these developments being the separation of the product cost from the source of the revenue stream—the product that is consumed may have a zero price, and advertising provides the revenue stream. This has implications for the objective of cost allocation practices and for cost management strategies. Consumer interactions on Facebook are resource-intense. The authors pose the question: How can these costs be managed when the organization has limited control over customer activities? Cloud costing is a term that is introduced to cover the cost of cloud-based systems. CIMA's strategic scorecard is then covered, and the chapter ends with sections devoted to decision making in an age of crisis and regulation in a risky world, which considers regulatory responses to the global financial crisis.

The final chapter, on "The Rising Tide of Change in Management Accounting," concludes the book with a recap of the key changes in business environment, technology, and organizations, and their possible influence on the future shape of management accounting. The authors challenge management accountants to be proactive in considering the opportunities and challenges created by recent environmental changes and pressures.

The early chapters of this book are very much scene-setting—making sure that readers are up to speed with past developments in management accounting and are familiar with ways that management accounting has embraced change, albeit with a lag. After reading the early material in the book, I was wondering what would emerge after this scene-setting, and found Chapters 3 and 4 particularly stimulating and thought-provoking. The material on the changes and pressures in the business environment is well-presented, and the discussion of their relevance to management accounting practice and to the organizational role of accountants is well done.

One criticism I have is that the authors have been overly cautious in predicting exactly how management accounting might respond to the changes. I was left wondering what the new generation of management accounting techniques will look like. Who will develop them? Where will they first be adopted? And how can we prevent the lag that has characterized the adoption of management accounting innovations in the past? However, these questions may be ones that the authors want their readers to be asking (and possibly answering) after reading this book. It may be up to us as accounting teachers and researchers to take these ideas to their next stage of development.

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HANS-GEORG BRUNS, ROBERT H. HERZ, HEINZ-JOACHIM NEUBÜRGER, and DAVID TWEEDIE (editors), *Globale Finanzberichterstattung/Global Financial Reporting* (Stuttgart, Germany: Schäffer-Poeschel Verlag, 2008, ISBN 978-3-7910-2754-8, pp. xxiv, 528).

The title of the book, *Globale Finanzberichterstattung/Global Financial Reporting*, reveals that this is something special. On the one hand, it is a really "multinational" publication, consisting of essays that are written in either English or German by authors from various countries all over the world. On the other hand, it is a so-called "*Festschrift.*" This is a type of publication that has a long tradition in German academia, and which is set up as a reader consisting of papers from different authors who want to honor, with their contributions, a specific person at a particular birthday or at the end of her/his professional career. The person honored with the "*Festschrift*" under review is Liesel Knorr; the occasion is her 60th birthday. Colleagues, associates, friends, and relatives contributed articles to this publication in order to express their gratitude for, and acknowledgment of, her contribution to the development of international and national financial reporting, and to state their affection for her as a person.

The four editors of the book represent major standard-setting bodies: These are Hans-Georg Bruns (former board member of the IASB), Robert Herz (at the time being chairman of the FASB), Heinz-Joachim

Neubürger (former head of the executive board of the Accounting Standards Committee of Germany [ASCG]), and David Tweedie (at the time being chairman of the IASB). According to them, Liesel Knorr "has been a major influence on the development of financial reporting on the international as well as the national level" (p. vi). After starting her national career as an auditor with one of the big global accounting firms in Cologne, Germany, she quite quickly began to work internationally in various positions. Apart from others, she was Technical Director of the International Accounting Standards Committee (IASC, predecessor of the IASB) from 1994 to 1999. Since 1999, she has been serving at the ASCG, first as General Secretary, and for the last years as President of the German Accounting Standards Board (GASB). Because of her extraordinary professional standard-setting experience, the European Commission appointed her to the Standards Advice Review Group (SARG), which is an important institution in the regulatory structure of the European Union (EU) for the endorsement of IFRS into the EU legal system. Liesel Knorr, for sure, has been and still is one of the most esteemed German accountants on the international scene of accounting standard setting.

Usually, a "*Festschrift*" shows a photo of the honored person on one of the first pages. However, this one contains two cartoons by a British cartoonist that reveal the work attitude of Liesel Knorr in an ironic way, and also show that the honored person is not an accounting technocrat, but a sympathetic person with a huge sense of (British) humor.

The book is a reader consisting of, in total, 26 essays, equally balanced between languages: 13 are written in English and 13 in German. The 39 authors/coauthors come from all over the world, although the majority are Germans (29). They have various professional backgrounds. There are current or former IASB members and members of the German or other national standard setters (23), representatives of academia (eight), of auditing firms (four), of enforcement institutions (two), and of global companies (two).

As this book review is for an English-speaking audience, the following analysis of the content focuses primarily on the essays written in English.

The book consists of four parts. Part A has the heading, "Setting of IFRS as the Global Accounting Standards," and it contains essays that deal with the general, conceptual, and political issues connected with the IFRS. In the first paper, Professor Wolfgang Ballwieser discusses from an academic perspective the "Reasons, Forms and Limitations of Global Information-Oriented Financial Reporting Rules." Some of his major lines of argument are "that the IASB Framework uses a concept of decision-usefulness that is immunised against empirical tests," that "the IASB's policy of preferring full fair value accounting is not convincing" (p. 14), and that the IASB should abandon the idea that one system of accounting standards could fit all purposes in all countries. In contrast, David Damant, a financial analyst, makes strong statements in favor of fair value accounting. According to him, the IASB should improve its Framework in order to provide a basis for financial accounting standards that allow "sophisticated people who command the capital in the world to invest as efficiently as possible" (p. 27). Therefore, according to the author, the IFRS should serve as an instrument of wealth creation. He challenges the IASB to widen the scope of fair value accounting and to introduce a performance concept based on multiple layers of performance measures.

Other articles in this part cover the role of IFRS in the EU, and the (political) part the EU and its institutions (should) play in the international accounting scene. One, written by Karel Van Hulle of the European Commission, gives a flashback of the historical attempts and steps to harmonize financial accounting within the EU, and the introduction of IFRS into the EU legal environment through the "IAS Regulation" in 2002. The other one, written by Stig Enevoldsen and Thomas Oversberg, both of the European Financial Reporting Advisory Group (EFRAG), explores the role that EFRAG has played and should play in order to give the "European voice" (p. 89) more importance in international accounting standard setting. This private-sector body was established in 2001 in order to give high-quality and independent technical advice on whether to endorse each individual IFRS into European law. It has developed over the years into a bridging institution between the IASB and the European constituencies. Besides Europe, the reader also obtains an interesting insight into the convergence process of Japanese accounting on the basis of IFRS. The article by Shizuki Saito, the former chairman of the Accounting Standards Board of Japan (ASBJ), shows that the ASBJ follows a very market-based approach to financial reporting and the choice of accounting standards, and that it has been trying hard to bring the Japanese GAAP system together with IFRS and U.S. GAAP.

An essay written in German, which contains statements with a strong international emphasis, was written by Jochen Pape and Gerd Fey, both of the Big 4 audit firms, who discuss major challenges for the IASB that result from its objective to converge its standards with national accounting standards of particular countries.

They see a potential risk, especially that its convergence project with the FASB might have a strong bias on the outcome of the IASB's standard-setting process and result in a corresponding underrepresentation of accounting concepts and traditions of other countries, which might lead to a lesser worldwide acceptance of the IFRS. For them, in particular, the outcome of the development of the IASB's revised Framework should not just reflect the U.S. perspective of accounting, but should also build on a broad international consensus. Other challenging issues mentioned for the IASB are the (potential) lack of comparable interpretations and applications of IFRS worldwide, as well as the potential of a decreasing acceptance and usefulness of IFRS accounts due to the increasing complexity of the standards and—very much related—the associated role of fair value measures. In addition, the authors argue that the IASB should focus its work on the usefulness of financial statements for the users of the provided information. This user-oriented approach would be required nowadays to increasingly provide, together with the financial statements, nonfinancial data and measures that have a considerable impact on the future prospects of an entity.

Part B contains essays on "Selected Issues of IFRS." Here (again), fair value measurement happens to be the most discussed issue. One article, written by Professors Bernhard Pellens and Thorsten Sellhorn, and a doctoral student, Adam Strzyz, provides an overview of the research dealing with conservatism in accounting, and the challenges that arise from the IASB's decision to reduce the importance of the principle of conservatism in its Framework and standards. The authors reveal the fact "that conservatism is a prominent feature of financial reporting globally—and has been for centuries" (p. 190). Another article investigates "the value in use of fair value accounting" (p. 195). Martin Schmidt and Kristina Schwedler, project managers at the ASCG, present the different measures of fair value in the IFRS and explain the relation of their application to income measurement, as well as the different concepts of capital maintenance. At the end, they come to the conclusion that "the value in use of fair value accounting is rather limited" (pp. 213).

Besides this more general issue of fair value, accounting-specific IFRS are highlighted in some other articles. Andrew Lennard and Ian Mackintosh, of the U.K. Accounting Standards Board, provide a historic insight into the development of IAS 37, "Provisions, Contingent Liabilities and Contingent Assets," as an example to illuminate "how accounting standards come about," and to "illustrate the process and the working methods, and also the technical issues and challenges that arose" (p. 218). As IAS 37 was developed by the IASC jointly with the U.K. ASB, the authors also want to present an "early example of co-operation between standard-setters" (p. 218). IAS 41, "Agriculture," is the issue which Warren McGregor, an IASB member, deals with in his essay. He does not provide a historic flashback of the standard's development, but instead discusses the impact of the standard on the global agricultural industry and puts forward arguments for a future review of the standard. Paul Pacter, at the time a senior staff member at the IASB, deals in his paper with a long and specialist standard, IFRS for SMEs (in those days, still at the exposure draft stage). The article provides a summary of the arguments in favor of this standard, the reasoning and the concept underlying its development, and an overview of its content and the major simplifications compared to the "full" IFRS. The last issue covered in this section of the book is the IASB project on a "management commentary." Kati Beiersdorf and Regine Buchheim, both former project managers at the ASCG, review the development of the IASB's discussion paper on this issue and discuss the major arguments in the related comment letters. They also give an overview of the content of the German Accounting Standard (GAS) No. 15, which deals with the management report. They argue that the German experience with the management report arising from GAS 15 could provide valuable input for the IASB project.

The "Application of IFRS and Issues Regarding the Application of IFRS" is the topic of Part C. Here, Andreas Barckow of Deloitte & Touche and a member of the GASB, confronts the definitions and concepts of equity in the IASB's Framework and IAS 32 with the ones of German GAAP, and reveals conflicting issues. He also presents approaches that have been put forward in the international discussion and gives some personal views on them. He argues that the standard setters should get rid of the traditional split between equity and liabilities and should devise new forms of presentation of the claims on an entity's assets. The accounting practice with regard to acquisitions according to IFRS 3 is dealt with in the paper by Martin Glaum, Donna Street, and Silvia Vogel (academics from the Universities of Giessen and Dayton). They present the results of their empirical study on the acquisition-related disclosures by companies, based on a sample of 357 entities based in 17 European countries. In their conclusion, they state that a considerable number of companies did not fully satisfy the IFRS requirements, and that many financial statements showed a lack of understandability, information content, and comparability of the presented disclosures.

Part D, on "Audit and Enforcement of IFRS," contains three essays, all of them in German. The first one, written by Professor Martin Richter, discusses the (potential) risks of the application of IFRS for the audit quality and scope of the so-called "expectation gap." Major issues are the increasing complexity of the standards, their frequency of change, and the potential shift of the IASB from the principles-based to the rules-based approach. The principles-based approach is the major content of the second essay in this chapter. Dr. Axel Berger, vice-president of the German financial reporting enforcement body, asks the question about the extent to which a principles-based approach of standard setting is favorable for enforcement institutions. In his understanding, the answer to this question depends very much on the internal documentation of a management's estimations and assumptions when applying a particular accounting method or choosing a particular measure. Berger questions the decision of the IASB to reduce the weight of the characteristic of reliability in its Framework and to increase the number of applications of fair values in the IFRS, all in relation to the enforcement function. The third essay describes the experiences and future perspectives of the German enforcement system from a quite national point of view.

This book is a great source of information on the global role of IFRS, its impact on national accounting regimes, the political environment surrounding the international convergence of accounting standards, and the technical challenges which the people and institutions involved have been, and are, facing. It provides views from people who have been major actors on the scene of (international) standard setting and have a long and thorough experience in this field. The contributions reveal that accounting convergence is not easy and is an increasingly challenging task for the IASB, as well as for the national standard setters, and that there are many divergent views on many issues. Critical arguments that appear in many of the articles are, among others, the increasing level of complexity of IFRS, the increasing scope of fair value accounting, and (partly related to this) the decreasing role of reliability as a central characteristic of accounting information, the frequency of change, the perceived reduction in the importance of the cost/benefit consideration by the IASB, and the risk that the IASB could lose contact with its constituencies because of its dominant aim of convergence with major economic regions and its perceived "one solution fits all" mentality.

However, it also becomes obvious in the book that the people involved are very dedicated and eager to meet the challenges, because they are convinced that global business needs a global "accounting language." This conviction was the driving force behind Liesel Knorr in her professional career for the last decades. Therefore, the book is a great achievement by the editors and the authors and a great gift not only for the honored Liesel Knorr, but also for all people interested in international accounting standardization all over the world.

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JOANNE LOCKE, ANDY LYMER, and ALAN LOWE, *Digital Reporting Options for Europe: A Study of Interactive Data from the Perspective of Non-Professional Investors* (London, U.K.: Centre for Business Performance, Institute of Chartered Accountants in England and Wales, 2010, ISBN 978-1-84152-623-2, pp. xi, 106).

I first became aware of XBRL about a decade ago, when it was in its infancy, and have followed the slow developmental process (from a distance) since then. I was intrigued to learn from the report that the U.S. Securities and Exchange Commission (SEC) has re-badged XBRL as "interactive data," deeming the former term to be unattractive to users (rightly, in my view) (p. 85). However, the authors of this report point out that the latter term is rather a misnomer, as there is no interactivity in the sense of two-way communication; the information is interactive only in the sense that users can engage with it and manipulate it (p. 2).

This report takes as its starting point the SEC requirement, approved in December 2008, for U.S. listed companies to submit their annual reporting documents to use XBRL data tags, together with the regulator's expressed wish to address the needs of the "average" (i.e., non-professional) investor. The report addresses two major research questions—one at the macro level, and one at the micro level:

1. How will the SEC's decision affect the more fragmented European regulatory situation—is a similar interactive data project likely?
2. How will non-professional investors react to interactive data?

The overarching theory used to consider these issues is A.H. Molina's model of socio-technical alignment. I confess that I had not previously heard of this model and was curious regarding its authority. A quick Internet search indicates that it has been used to address a range of innovations (e-commerce innovation, telemedicine diffusion, computers in schools), although most such studies seem to have been written by Molina himself and his associates at Edinburgh University. This is an interesting theory, which "provides an approach to analysing the alignment of socio-technical constituencies necessary to achieve the development and acceptance of new technologies" (p. 4). The theory is noted by the authors to have many points of similarity with Bruno Latour's work, which may be more familiar to many. Molina's theory is articulated through a "diamond of socio-technical alignment," which has six segments—one devoted to the technology; one to the constituencies; and four to "dimensions that are influential in terms of the success or failure of the constituency's efforts to develop and disseminate the technology" (p. 5). The dimensions concern: intra- and inter-organizational governance; interacting collaborating/competing technologies; nature of target problem, market and industry trends; and target constituents' perceptions and pursuits.

Following a brief introduction in Chapter 1 and a summary of the theoretical framework in Chapter 2, the report is structured around the six elements in this alignment model, with a chapter devoted to each element (Chapters 3 to 8). A final chapter summarizes and concludes. The evidential base for the study draws upon documentary sources, interviews with key XBRL participants and experts, and an experiment conducted using accounting students as surrogates for non-professional users. The experiment is reported in Chapter 4, which addresses target constituents' perceptions and needs.

The authors conclude that there are both significant facilitating conditions and barriers to a pan-European standardized digital data format—it helps that we use common IFRS accounting standards, but Europe lacks a single SEC-equivalent entity to act as energizing coordinator. In the absence of pressure from preparers or users, developments may, therefore, stall.

The other key finding, based on the experimental results, is that the new technology has the potential to have "a negative impact on the quality of investment decision making by non-professional investors" (p. 42). This is argued to be because they lack a well-defined decision model and also fail to integrate the quantitative financial statement information with the qualitative narrative information.

As I have a particular interest in narrative reporting, I was always intrigued by the prospect that, ultimately, narrative information would be included in the tagging framework. This seemed like a very tall order, although an exciting development for all content analytic disclosure researchers. It seems, however, that even in the U.S., where developments are most advanced, there is still no requirement from the SEC for Management's Discussion & Analysis (MD&A) disclosures to be tagged (p. 85).

Anyone interested in digital reporting or wanting to find out more about it will want to read this report. It represents an authoritative exposition of a period of development in the life of this new technology. Inevitably, aspects of it will become out-of-date quite quickly; however, there is also a wealth of material of enduring interest. The report is also likely to be a worthwhile read for those interested in the global financial regulatory architecture and those whose interest is in behavioral aspects of financial reporting (i.e., investor decision making).

I have two final points. In the U.K., XBRL is being rolled out by HM Revenue & Customs (the tax authority), who intend to require U.K. companies to submit their statutory accounts in Inline XBRL format from April 1, 2011. It is clear that this constituent body at least perceives net benefits from standardization. There is concern, however, that the software vendors have not yet got the necessary software products available (Goundar 2011).

Second, I would note that a shorter 15-page "briefing" document linked to this report is available for free download from the ICAEW website (http://www.icaew.com/en/technical/research-and-academics/publications-and-projects/information-technology).

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JOSHUA RONEN and VARDA (LEWINSTEIN) YAARI, *Earnings Management: Emerging Insights in Theory, Practice, and Research* (New York, NY: Springer Science+Business Media, LLC, 2008, ISBN 978-0-387-25769-3, pp. xx, 581).

Professors Joshua Ronen and Varda Yaari have taken on an ambitious project in *Earnings Management: Emerging Insights in Theory, Practice, and Research.* Their aim is to provide a comprehensive review of earnings management, specifically the practice itself and research related to the practice, and to create a foundation for future research. The nature of the topics addressed and the research-oriented approach taken to address those topics suggest that the book would be of greatest interest to accounting scholars and to doctoral students.

The book is organized into four parts, each of which has several chapters. The chapters are in turn organized into sections, which are listed in the Contents at the front of the book. The reader will probably find the Contents listing helpful as a guide to locating specific topics and discussions, as compared to the Index, which is shorter and less detailed. The remainder of this review follows the organization of the book. We describe the intent of each of the four parts and how the authors accomplish that intent. A final section contains some concluding remarks.

Part 1 includes Chapters 1 and 2. It begins with a short chapter that describes why earnings (and, by implication, manipulations of earnings) are important, from a contracting perspective, a decision-making perspective, and a governance/legal perspective, which emphasizes manager-shareholder conflicts of interest. The discussion of the impact of each perspective on the importance of earnings concludes with a short analysis that sets up a link between that perspective and the twin issues of how and why earnings would be managed.

Chapter 2 of Part 1 concerns how earnings management is defined, how it is accomplished, and how the authors believe its effects might be characterized (beneficial, pernicious, or neutral). Chapter 2 provides a summary and discussion of earnings management definitions in the literature, followed by the authors' definition: "earnings management is a collection of managerial decisions that result in not reporting the true short-term, value-maximizing earnings as known to management" (p. 27). This definition of earnings management includes both real actions (production or investment decisions) and financial reporting choices (for example, judgments and estimates that affect accruals). Given this definition, the authors classify earnings management, following previous research, as including conservative accounting (for example, "overly aggressive" provisioning), aggressive accounting (for example, "understatement" of a provision), or fraud (GAAP violations). A second classification of earnings management developed by the authors and consistent with previous research turns on whether the effects are beneficial (the result of earnings management is an earnings number that is a signal of long-term value), pernicious (earnings management conceals short-term or long-term value), or neutral (earnings management reveals short-term true performance).

There are several distinctive features of the definition of earnings management offered by Ronen and Yaari. First, the authors acknowledge that their definition of earnings management rests on two assumptions: there is a "true" earnings number (described by the authors as objective, neutral, and firm-value-maximizing over a short reporting interval, such as a quarter), and management knows this true earnings number or at least has superior information about it. Second, short-term true earnings can obscure long-term true earnings because of transitory earnings components. Both of these features of Ronen and Yaari's definition are based on a "true earnings" perspective, as opposed to a perspective that defines accounting earnings as changes in net assets, except for transactions with owners. Ronen and Yaari do not address the question of whether "true earnings" can be independently observable by researchers or anyone else except, perhaps, management, and whether true earnings can be defined without reference to assets and liabilities. Third, Ronen and Yaari recognize the difficulty faced by researchers in identifying and quantifying managers' private information about "true" earnings, particularly with regard to being able to classify the outcomes of earnings management as pernicious, neutral, or beneficial.

With respect to classifying earnings management as beneficial, Ronen and Yaari discuss the possibility that management might manipulate earnings "to allow investors to better distinguish between [persistent and transitory] components" (p. 27), a beneficial activity. As we understand this discussion, Ronen and Yaari are suggesting that beneficial earnings management in the presence of transitory earnings components would permit the distortion of a "neutral" earnings number that *both* faithfully reveals short-term true performance *and* contains a transitory component, in order to create a "beneficial" signal of long-term value. We note that adopting this perspective requires that management have sufficient knowledge and foresight to be able to determine what is and is not pertinent to investors' long-term valuation assessments. With respect to the question of pertinent information, Ronen and Yaari note that "Investors ... prefer to separate persistent earnings from one-time shocks" (p. 27). This statement is hard to dispute, but it does not necessarily suggest earnings management (manipulation of the reported amount) *per se*; rather, it suggests classification, presentation, and display on the face of the income statement that facilitates the task of identifying earnings components that differ in persistence. Understanding whether investors benefit more from seeing "neutral" short-term performance reports that contain both persistent and transitory components separately presented, either on the face of the income statement or in the notes or from seeing "beneficially managed" numbers that eliminate transitory components from reported earnings, requires better knowledge than is currently available about whether and how financial statement users analyze and act on accounting information, both recognized and disclosed. An understanding of the behavioral aspects of investors' processing of accounting information is outside the scope of Ronen and Yaari's book; their classification scheme does, however, suggest a need for research that investigates these behavioral issues.

Part 2 describes 13 instances or manifestations of earnings management, in three chapters. This portion of the book focuses on existing empirical research on earnings management and the institutional context in which earnings management occurs. Chapter 3 considers management's incentives to manage earnings (four instances), Chapter 4 considers earnings management that is intended to affect judgments and decisions of financial statement users (six instances), and Chapter 5 considers gatekeeper-related earnings management (three instances, involving analysts, governing boards, and auditors). Before presenting these 13 discussions, Ronen and Yaari present a schematic (Figure 1) that depicts the players involved in financial reporting generally and earnings management in particular. They also describe the Sarbanes-Oxley Act of 2002, including the problems it was intended to address and resolve, the provisions of the Act most directly related to financial reporting, and selected research on the Act.

Chapter 3 is an excellent summary of empirical research relating to earnings management. This chapter begins by describing management's responsibilities in reporting earnings, conflicting incentives faced by managers in meeting those responsibilities, and managers' ability to manage earnings to achieve some private benefit. The chapter describes research on, for example, human capital considerations (for example, CEO turnover, management buyouts) and insider trading and compensation (emphasizing both cash compensation and share-based payments and their measurement). Also in Part 2, Chapter 4 describes research on how earnings management affects arrangements between firms and several categories of corporate stakeholders, including small investors, creditors, regulators of firms in regulated industries such as financial services, and employees. In the discussion of earnings management and shareholders, the authors use the previously discussed classification of earnings management as beneficial, pernicious, and neutral to analyze pricing effects; they also discuss research concerned with the timing of when the stock market might learn about earnings management (for example, fraudulent reports might be exposed long after the reports were issued). This stock market-oriented discussion is the most detailed discussion in this chapter, encompassing research on, for example, loss avoidance, restatements, equity offerings, and mergers. A shorter discussion of earnings management and creditors focuses mostly on the large literature that posits debt covenants as creating an incentive to manage earnings. The sections on regulatory uses and employees are both relatively brief compared to other discussions in this chapter. The regulatory use discussion considers tax expense-driven earnings management and, very briefly, earnings management in banks and insurance companies. The discussion of employees and suppliers, competitors, and customers is also brief.

Chapter 5 deals with gatekeepers, including analysts, governing boards and ownership structures, auditors, and, mentioned briefly, the press. This chapter provides a particularly long and detailed discussion because of the sheer size and diversity of the related literatures. The discussion of analysts considers, in some detail, research that analyzes managers' desire and ability to "meet or beat expectations" (MBE) analysts' earnings expectations. The authors describe the MBE phenomenon, articulate necessary conditions for an MBE strategy to affect managers' incentives to manage earnings, and discuss the difficulty in discerning the MBE condition, given other concurrent factors (for example, management guidance of analysts toward a lower earnings expectation that can be more easily beat). This MBE review would be particularly helpful to a researcher or doctoral student who is interested in understanding how, and in what settings, researchers have used the MBE condition to indicate earnings management. The discussion of governing boards and ownership structures includes, in addition to analyses of relevant research, enough description of the institutional arrangements applicable to governing boards in the U.S. to enable the reader to place the research in the context of, for example, SEC rules about proxy access and the relevant features of the Sarbanes-Oxley Act.

Part 3, the theoretical companion to Part 2, both summarizes analytical research on earnings management and adds the authors' own insights, particularly with respect to the roles of product markets, factor (or input) markets, and competition in encouraging or mitigating earnings management, and with regard to ideas developed by the authors about financial statement insurance as a device for improving financial reporting. The three chapters included in Part 3 consider models based on truth-telling, models based on income-smoothing, and models of extreme behaviors such as earnings maximization or minimization. Within each model-based chapter, Ronen and Yaari discuss research related to capital market effects, governance, product or factor markets, and the legal/regulatory system, acknowledging that these categories overlap (for example, legal/regulatory systems affect how capital markets develop). Like the discussions of empirical research on earnings management, each analytical discussion is necessarily terse, but also very helpful, both because of the use of the authors' beneficial-pernicious-neutral characterizations and because of the inclusion of sufficient notation to make the model set-ups clear.

Part 4 describes and analyzes analytical and empirical models whose function is to separate earnings or accruals into non-managed (non-discretionary) components and managed (discretionary components). Ronen and Yaari emphasize that if the models are to be effective, they must deal with (1) reversals of previous accruals, and (2) the variation of non-discretionary accruals with performance, in addition to identifying managed and non-managed components of earnings or accruals. Throughout, they acknowledge that a well-functioning model of managed and non-managed earnings or accruals must address and resolve the fundamental difficulty that the researcher observes only reported earnings and reported accruals, not their managed and unmanaged components (that is, the components must be estimated and are, therefore, subject to measurement error and bias). Chapter 9 of Part 4 presents a model of accruals that takes sales as fundamental and derives the statistical properties of managed accruals. Chapter 10 summarizes the empirical research on estimating abnormal (managed) accruals, culminating in a lengthy discussion and analysis of the Jones (1991) model. Chapter 10 should be particularly useful for researchers (including doctoral students) seeking a discussion of the assumptions and difficulties involved in developing and estimating a model, like the Jones (1991) model, that links unmanaged accruals to accounting fundamentals. Chapter 11 continues this helpful discussion along two lines: research that proposes and tests modifications to the Jones (1991) model (for example, performance matching), and alternative methods for detecting earnings management (for example, detailed modeling of the normal and abnormal components of a single account).

In addition to their descriptions and analyses of the literature on earnings management, Ronen and Yaari have also assembled an extensive bibliography (of over 100 pages) of published and unpublished research. Creating this bibliography is itself a welcome contribution. However, the bibliography and the coverage of the book itself are not exhaustive. As discussed by Ronen and Yaari in a "Summary and Postscript" section, the book does not cover not-for-profit organizations' earnings management, the relation between disclosure and earnings management, and most of the literature on earnings management using non-U.S. data.

Professors Ronen and Yaari have provided a thorough and nearly comprehensive review and analysis of the large analytical and empirical literature on earnings management. In addition, they have added some ideas of their own, particularly about the effects of product markets and financial statements insurance and about open issues. This book would be useful reading for accounting researchers, including doctoral students, who are interested in a summary and critical analysis of accounting research on earnings management.

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Annual Report and Editorial Commentary for *The Accounting Review*

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I. INTRODUCTION

The following pages comprise my third and final Annual Report as outgoing Senior Editor of *The Accounting Review* (*TAR*). As I did back in 2008 when I first adopted the new format for the Annual Report, as directed by the Publications Committee and Executive Committee (now Board of Directors) of the American Accounting Association (AAA), I am liberally supplementing the various requested tables with my comments and observations, subject to the understanding that others are free to disagree with my interpretations. I believe that the "commentary" part of an Annual Report and Editorial Commentary makes the document more interesting and informative, and I hope the reader agrees.

As I understand it, the spirit of the more comprehensive Annual Reports now provided by AAA journals is to provide our constituents not only with increased accountability, but also with information about our submissions and decisions that might help to address misunderstandings about the process. As in prior years, I will begin with some brief comments on *TAR*'s editorial process in Section II, followed by various statistics and associated commentary in Section III. Section IV closes with some notes of thanks and recognition.

II. *THE ACCOUNTING REVIEW* EDITORIAL PROCESS

My first Annual Report (Kachelmeier 2009) explained the editorial philosophy and process I implemented as Senior Editor.[1] I refer the interested reader to that report for greater detail, although I will provide a quick overview. My philosophy from the outset has been to delegate many of the journal's editorial decisions to 13 outstanding coeditors that I thank later in this Report. Conversely, I have found it important to centralize the reviewer-selection process, with the help of the truly exceptional efforts of my doctoral research assistant, Tracie Majors. Tracie and I have met daily to discuss potential reviewers on each new submission, irrespective of its assigned editor. We realized early on that quality reviewers are a journal's most precious resource, especially under a two-reviewer system. Accordingly, the reviewer-selection process involves a delicate balancing of reviewer qualifications, availability, and likely biases. For example, a frequent dilemma involves

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[1] Also see Kachelmeier (2004) for some additional personal thoughts on the journal review process in accounting.

what to do when receiving a submission that is critical of conclusions set forth in published research by X and Y. We will consider X or Y as one of the reviewers in such cases to make sure that the submission characterizes X and Y's research accurately, but when proposing X or Y (or one of their scholarly allies) as a reviewer, we have done our best to choose a second reviewer with a different and ideally independent scholarly perspective. In this manner, I believe strongly that a two-reviewer system helps to protect authors from decisions that are based more on defensive posturing or on taste than on scientific merit, although the extent to which we can attain this ideal is constrained by the practical realities of our available reviewer pool at any point in time. Centralizing this process helps to ensure consistent application of the resource allocation exercise of choosing reviewers, while also providing a check on the system by seeking the assigned editor's approval before sending out the review requests.[2]

In the spirit of ongoing calls for scholarly diversity in accounting (e.g., Tuttle and Dillard 2007; Fogarty and Jonas 2010), one of the indicators of *TAR*'s diversity is the breadth of our reviewer pool. With the understanding that we can ask Editorial Board members up to six times per year, the 130 individuals on our Board clearly take on much of the review effort.[3] However, it would be misleading to presume that *TAR*'s editorial decisions are guided only by these 130 individuals. Rather, Appendix A to this Report acknowledges and thanks an additional 453 *ad hoc* reviewers from a wide variety of topical and methodological backgrounds who completed one or more reviews during the fiscal year ending May 31, 2011, and without whose help *The Accounting Review* could not possibly have operationalized a two-reviewer system. Combining the two numbers indicates that 583 different scholars served as *TAR* reviewers during the year covered by this report. As I see it, the breadth inherent in a number that large is meaningful evidence of the journal's willingness to subject each submission to a fair evaluation by peer experts in the area of the submission.

Given that incoming Senior Editor John H. (Harry) Evans III will be implementing his own philosophies and policies that he will explain in his first Annual Report next year,[4] I will leave it at that rather than take too much more space explaining the processes employed by an outgoing editorial regime. I will, however, comment briefly on the understanding Professor Evans and I reached regarding the editorial transition. Consistent with the rules in place when I took over from former Senior Editor Dan Dhaliwal in 2008, all manuscripts available for a decision (meaning both reviews in hand) by May 31, the last day of the journal's fiscal year, have decisions reached by the outgoing editor originally assigned to that manuscript, even if the actual decision letter is sent after June 1. Conversely, the incoming regime has decision rights over all files awaiting one or both reviews on June 1, including revisions sent out for further review. Some authors have expressed anxiety about having a new editor on a revision, but *TAR*'s volume is simply too large to justify retaining the former editor in all such cases. The understanding Professor Evans and I reached is that if the reviewer input is such that Professor Evans or one of his incoming coeditors is comfortable reaching a decision on a revised manuscript, be it favorable or unfavorable, then the incoming regime should feel free to assume that responsibility. Alternatively, if the incoming editors feel uncomfortable reaching a decision on a revision because the decision is difficult (due, perhaps, to split reviews) and/or the file has too much of an editorial history, then Professor Evans is free to ask the former editor to continue. As was the case in 2008, these determinations are best made on a case-by-case basis.

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[2] Conversely, consider the incentives coeditors might face under a delegated reviewer-selection system. If given the choice, a coeditor might reasonably be inclined to choose the two best available reviewers for each new submission, thereby exhausting the "blue-chip" reviewer pool more quickly than would a centralized system that forces a more constrained use of the most experienced reviewers. A byproduct of a centralized process is that it helps to bring more new reviewers into the fold, especially when the other reviewer assigned to a manuscript is more experienced.

[3] We implement the "six-per-year" understanding for Editorial Board members by trying to refrain from a subsequent review request until at least two months have passed since the most recent request. As a practical matter, the lags in this process can mean only four or five requests per year instead of six, though our records indicate that one Editorial Board member, Gregory Miller of the University of Michigan, duly accepted and completed 18 *TAR* review requests, or six per year for each of the three years of the current editorial term. Thanks Greg!

[4] My understanding from frequent discussions is that Professor Evans plans to continue most of the policies currently in place, as described in prior Annual Reports (Kachelmeier 2009, 2010). Professor Evans has served as a coeditor under the outgoing editorial regime, so he is familiar with the current processes and policies.

III. EDITORIAL AND PUBLICATION STATISTICS

Table 1: Annual Activity Summary

Table 1, Panel A reconciles *TAR*'s workflow for the journal year ending May 31, 2011, with comparative statistics for 2010 and 2009. The volume of new submissions is holding steady at about 500 per year (502 in fiscal 2010 and 494 in fiscal 2011), although the current year's revision volume is up from 212 to 228, possibly because some authors accelerated their revision efforts in an attempt to achieve closure on a final decision before the change in editorial regime on June 1, 2011. Overall, *TAR* sent out 708 editorial decisions during the year, which is up from 673 decisions last year, after adjusting for our beginning and ending "work in process." Panel A is on a fiscal-year basis. The calendar-year data in Table 1, Panel B provide comparability to pre-2008 editorial reports that were reported on that basis.[5] As I have observed in previous Annual Reports, the volume of new submissions to *The Accounting Review* approximately doubled over the course of the last decade. As documented in the third and fourth columns of Table 1, Panel B, the increased volume of submissions prompted an increase from four to five (in 2006) and then six (in 2008) issues per year, along with a corresponding (albeit lagged) increase in publications, as proxied in Table 1, Panel B by the total *TAR* page count per year.

Table 2: Annual Outcome Summary

Table 2, Panel A documents the outcomes for the decisions in Table 1. Panel A also documents two estimated "acceptance rates"—one (Rate 1) that divides the acceptances by the "final outcome" decisions during the current year (i.e., excluding revision decisions), and another (Rate 2) that divides the acceptances by the total decisions. The two acceptance rates reflect contrasting assumptions regarding the eventual fate of invited revisions. Accordingly, Rate 1 can be viewed as a positively biased measure of the acceptance rate, whereas Rate 2 is negatively biased, such that the "true" acceptance rate lies somewhere in between—likely between 12 and 13 percent for the most recent fiscal year.

Table 2, Panel B presents a different way to conceptualize the acceptance data. The idea behind Panel B is to think of each year as a unique "cohort" that eventually, with the passage of time, reaches a final resolution. Thus, for the fiscal year ending May 31, 2009, *TAR* received 557 new submissions, of which 15 are still awaiting further revision and a final decision as of May 31, 2011. The other 542 of those files have reached their final resolution, such that Panel B can report an "acceptance rate" with greater precision for the manuscripts submitted that year. As Panel B indicates, the fiscal 2009 final acceptance rate is between 14.9 percent and 17.6 percent, depending on the final outcomes for the 15 files from fiscal 2009 that are still pending a final revision and

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[5] It is coincidental that *TAR* received exactly 494 new submissions both for the fiscal year ending May 31, 2011 (Table 1, Panel A) and for calendar year 2010 (Table 1, Panel B).

TABLE 1

Annual Activity Summary

Panel A: Annual Activity Summary by Journal Year

Journal Year Ending May 31	Manuscripts in Process at Beginning of Year (a)	New Submissions Received (b)	Resubmissions Received (c)	Manuscripts Available for Evaluation (d) = (a) + (b) + (c)	Decision Letters Sent (e)	Manuscripts in Process at End of Year (f) = (d) − (e)
2009	133	557	163	853	719	134
2010	134	502	212	848	673	175
2011	175	494	228	897	708	189

Panel B: New Submissions by Calendar Year

Calendar Year	New Submissions	*TAR* Volume (Number of Issues)	Total Page Count per Volume
1998	196	Vol. 73 (4)	577
1999	239	Vol. 74 (4)	530
2000	260	Vol. 75 (4)	492
2001	328	Vol. 76 (4)	701
2002	324	Vol. 77 (5)	1,034
2003	327	Vol. 78 (4)	1,108
2004	307	Vol. 79 (4)	1,216
2005	389	Vol. 80 (4)	1,274
2006	413	Vol. 81 (5)	1,181
2007	443	Vol. 82 (5)	1,393
2008	482	Vol. 83 (6)	1,698
2009	508	Vol. 84 (6)	2,094
2010	494	Vol. 85 (6)	2,221

Explanations of columns in Panel A:

(a) Manuscripts in process as of the beginning of the year include all new submissions and revisions pending decision (generally awaiting review), but exclude manuscripts awaiting revision from authors.

(b) New manuscripts received during the year, excluding resubmissions of revised manuscripts.

(c) Resubmissions of invited revisions.

(d) Summation of columns (a), (b), and (c).

(e) Completed decision letters, including subsequent decisions for manuscripts previously evaluated as a "revise and resubmit" decision within the same fiscal year.

(f) Manuscripts awaiting review and/or editorial decision as of the end of the journal's fiscal year. These manuscripts become the "beginning inventory" for the following year.

decision. Similarly, for the fiscal year ending May 31, 2010, the final outcome resolution data as of May 31, 2011 indicate that the acceptance rate for the fiscal 2010 files will be between 6.0 percent and 17.1 percent, a much wider range than that reported for fiscal 2009 because a much larger number of fiscal 2010 manuscripts are awaiting revision as of May 31, 2011. If one assumes that about half of the invited revisions will eventually be accepted, the true acceptance rate would roughly split the difference between these bounds, suggesting an acceptance rate for the fiscal 2010 manuscripts of around 12 or 13 percent.

TABLE 2

Annual Outcome Summary

Panel A: Outcomes by Fiscal Year

Journal Year Ending May 31	Decision Letters Sent	Rejections	Revise and "Uncertain" Decisions	Acceptances and Conditional Acceptances	Acceptance Rate 1	Acceptance Rate 2
	(a)	(b)	(c)	(d)	(e) = (d)/ [(b) + (d)]	(f) = (d)/(a)
2009	719	408	230	81	16.6%	11.3%
2010	673	403	207	63	13.5%	9.4%
2011	708	437	193	78	15.1%	11.0%

Panel B: Final Outcome Resolution for All New Submissions

Journal Year Ending May 31	New Submissions Received	Cumulative Acceptances through May 31, 2011	Cumulative Rejections through May 31, 2011	Files Pending Further Revision as of May 31, 2011	Lower Bound on Acceptance Rate	Upper Bound on Acceptance Rate
	(a)	(b)	(c)	(d)	(e) = (b)/(a)	(f) = [(b) + (d)]/(a)
2009	557	83	459	15	14.9%	17.6%
2010	502	30	416	56	6.0%	17.1%

Explanations of columns in Panel A:

(a) This column is the same as column (e) of Table 1, Panel A, reflecting all decision letters sent during the fiscal year, including decisions on manuscripts that had already been evaluated previously within the same fiscal year (with invitation to revise and resubmit). Thus, the number of unique manuscript files processed is somewhat lower than the number of decision letters sent.

(b) Exhibit 1 separates the total rejections into manuscripts rejected due primarily to insufficient contribution and manuscripts rejected due primarily to a perceived threat to the validity of the reported claims.

(c) Exhibit 1 separates this column into decisions logged as standard "revise-and-resubmit" outcomes and decisions logged as "uncertain" outcomes that allow but do not necessarily encourage resubmission.

(d) Total acceptances and conditional acceptances include manuscripts published and forthcoming in *The Accounting Review*. Thus, the total acceptances during a year do not represent the actual number of articles published during that year. Acceptance totals include only those files accepted from the normal review process, and exclude invited commentaries from AAA Presidential Scholar Lectures and from occasional research forums.

It would be misleading to directly compare the fiscal 2009 and fiscal 2010 statistics in Table 2, Panel B, insofar as the cutoff date of May 31, 2011 allows a much longer period to record final outcomes for the fiscal 2009 manuscripts than for those submitted in fiscal 2010. (I do not even report the fiscal 2011 final resolutions, as insufficient time has elapsed to provide any meaningful insight as to final outcomes for current-year submissions.) Nevertheless, as seems evident in Panel B, I should acknowledge that the final acceptance rate will likely end up being somewhat higher for fiscal 2009 (around 16 percent) than for fiscal 2010 (around 12 or 13 percent). By way of explanation, when I became Senior Editor in 2008, I perceived a loud and clear mandate from the AAA Publications Committee and from many other constituents to "grow" the journal, absorbing the newly increased capacity of six issues per year and countering the sense that accountants have a harder time publishing in the "majors" than do scholars in other business disciplines (e.g., Buchheit et al. 2002; Swanson 2004). Thus, when reviewers disagreed on a first-round submission in 2008 (with at least one recommending revision), my coeditors and I were generally inclined to leave the door open. We built a buffer of accepted manuscripts sufficient to ensure full issues on a regular basis, and I stand behind each of those decisions.

To this day, I believe strongly that a two-reviewer system can be justified only if the editor is willing to overrule a reviewer who recommends rejection in favor of a reviewer who forwards a more positive recommendation. However, as the term has progressed, my coeditors and I have become more inclined at the margin to consider resolving a split on the side of rejection if the negative reviewer presents compelling arguments that a study's incremental contribution is too modest for *TAR* or its claims are too much in doubt. The difference is small and probably not noticeable to the vast majority of authors or readers, but it is true that we will end up publishing a slightly greater percentage of our fiscal 2009 submissions than will be the case for our fiscal 2010 submissions. That said, we have published 12 articles in each and every issue starting with March 2009, so the days of "thin issues" have become a distant memory, while I believe that we have also protected *TAR*'s reputation with high-quality standards.

Exhibit 1: Histogram of Editorial Rounds and Outcomes

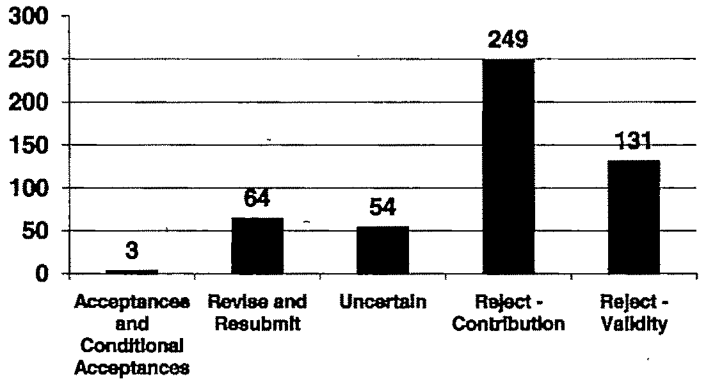
Exhibit 1 drills deeper into the decisions tallied in Table 2 by showing the outcome frequencies by round for the year ending May 31, 2011. This exhibit also provides finer detail, dividing the revision invitations into standard "revise-and-resubmit" versus "uncertain" decisions, as well as indicating whether rejections are due primarily to concerns about a study's incremental contribution or to the validity of its primary claims. All panels in Exhibit 1 combine acceptances and "conditional" acceptances into one category, as the conditions are generally straightforward requests for a final requested revision. To date, we have yet to reject any conditionally accepted manuscript; the worst that can happen in such a case is that the author might get delayed an issue if the final revision does not quite clear the conditions to the editor's satisfaction.

Regarding the two revision categories, both have outcome risk, but the degree of that risk is substantially higher for an "uncertain" decision. Specifically, an "uncertain" letter conveys the sense that neither the reviewers nor the editor can envision a viable revision path that would address the identified concerns, but that the editor recognizes that the author might be able to construct such a path. Accordingly, such a letter gives the author an *option* to revise and resubmit, but does not necessarily encourage the author to exercise that option. The intent is to provide full disclosure to the author that withdrawing the manuscript might be in the author's best interest if the author's candid assessment is that the concerns raised are inherent to the study. As a practical matter, most recipients of "uncertain" letters choose to revise and resubmit in spite of the cautions, but the rejection rate on "uncertain" revisions is substantially higher than that for standard invitations to revise and resubmit. The easiest way for an author to tell which type of letter s/he has received is that only an "uncertain" letter asks the author to send an email indicating whether the author intends to revise and resubmit.

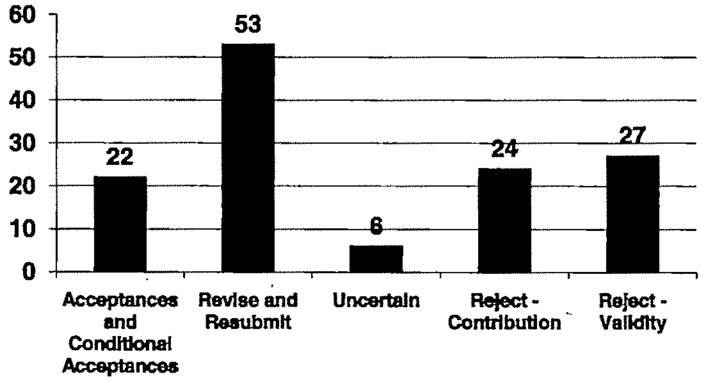
Exhibit 1, Panel A indicates that very few submissions result in a first-round acceptance, although I am happy to say that three manuscripts achieved that rare distinction this past year. An additional 118 manuscripts (24 percent of the 501 first-round decisions) received the (relatively) good news of an invitation to revise, although 54 of these 118 were in the more cautious "uncertain" category. Clearly, the modal outcome, comprising 50 percent of the first-round decisions, is a rejection due primarily to concerns that the manuscript's incremental contribution to the literature is too modest to justify publication in *The Accounting Review*. This "reject-contribution" category occurs roughly twice as often in the first round as rejections due to concerns with a study's validity, which is the second most frequent first-round outcome (26 percent). We try to indicate in our rejection letters whether the decision is due primarily to contribution concerns or

EXHIBIT 1
Histogram of Editorial Rounds and Outcomes
Journal Year Ending May 31, 2011

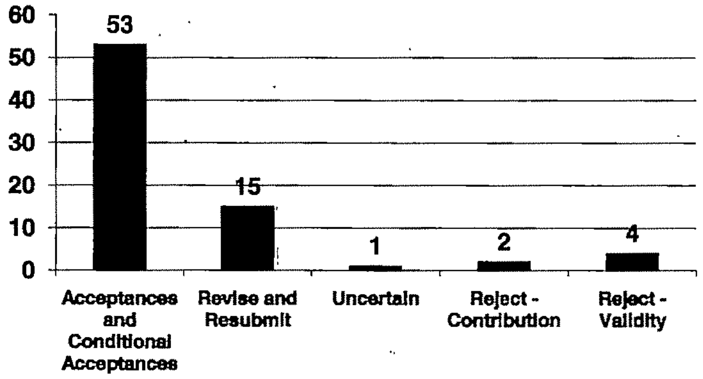
Panel A: First-Round Outcomes (New Submissions)



Panel B: Second-Round Outcomes (First Revisions)



Panel C: Third- and Fourth-Round Outcomes (Second and Third Revisions)



validity concerns, in hopes of guiding the author's sense of whether the next step is to consider if the contribution might be more suitable for a different journal or if the study is subject to more fundamental issues that call its primary claims into question.

Moving to the second round (i.e., first revisions), Exhibit 1, Panel B tallies 22 (conditional) acceptances, or 17 percent of the 132 total second-round outcomes. An additional 51 first revisions (39 percent) receive rejection letters at this stage. As I always remind myself, a second-round rejection is painful, but it is not as painful as a third-round rejection, compelling the editor to face the music if a manuscript is not making progress toward publication. The remaining 59 second-round outcomes (45 percent) invite further revision, though six of those 59 are in the pessimistic "uncertain" category.

By the time an author gets to the third round or beyond, Exhibit 1, Panel C documents that the odds of success increase dramatically. Of the 75 fiscal 2011 decisions in Panel C, 53 (71 percent) rewarded the author's perseverance with an acceptance or conditional acceptance. At the other extreme, we rejected six manuscripts in the third round, a number that we try to keep low but can never get to zero. Panel C also includes ten fourth-round decisions and one fifth-round decision, all of which were (conditional) acceptances.

Table 3: Submissions and Acceptances by Subject Area and Research Method

From the feedback I have received, the most interesting and also the most contentious table in the Annual Reports I have submitted over the past three years is Table 3, which categorizes submissions and acceptances by primary subject area (Panel A), primary method (Panel B), and subject areas crossed with methods (Panel C). This year I will also add columns to Panels A and B for the cumulative statistics over our three-year editorial term from June 1, 2008 to May 31, 2011, as well as adding new Panel D to show the three-year cumulative frequencies that cross subjects by methods.

Before getting to the controversial comments I always interject at this point, let me offer a clarification to reconcile the numbers. The astute reader will note that the total submissions tallied in Table 3 do not quite sum to the total decisions in Tables 1 and 2, nor do the three-year cumulative submission statistics in Table 3 agree to the sum of the three individual years. The reason for these discrepancies is that some unique files can receive multiple decisions within the same year and across years, due to invitations to revise and resubmit. Each year's Table 3 excludes earlier versions of the same manuscripts to avoid double counting topics and methods for such files, and the cumulative statistics in Table 3, Panels A, B, and D exclude submissions from previous years for a file also tallied in a subsequent year.

The simple and overwhelming takeaway from Table 3 is that *The Accounting Review* accepts articles in frequencies that are nearly exactly proportional to our submission frequencies, whether by topic, by method, or by topic crossed with method.[6] Perhaps the best way to suggest what I think this conclusion means is to clarify what it does not mean. Achieving equivalent submission and acceptance percentage frequencies by area does not imply that the accounting discipline is

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[6] One possible exception to this conclusion that caught my eye is that our cumulative submission frequency of 6.1 percent for international accounting topics is about twice the cumulative acceptance frequency of 3.2 percent for this category (see Table 3, Panel A). Although I have not analyzed the international accounting submissions in any rigorous manner, my general sense is that the vast majority of these submissions over the past three years employ analysis tools common to financial accounting empirical-archival studies. In general, many rejections then result because the international accounting questions amenable to such tools have already been asked and documented (contribution issues) or that the designs and available data are insufficiently developed to yield compelling answers (validity issues). As international accounting remains a critically important research area, I am hopeful that future *TAR* Annual Reports will show more balance for this category.

TABLE 3

Submissions and Acceptances by Subject Area and Research Method
Journal Year Ending May 31, 2011

Panel A: Submissions and Acceptances by Subject Area

	Year Ending May 31, 2011				Three-Year Term from June 1, 2008–May 31, 2011			
	Submissions		Acceptances and Conditional Acceptances		Submissions		Acceptances and Conditional Acceptances	
Primary Subject Area	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Auditing	98	15.1%	11	14.1%	291	17.8%	43	19.4%
Financial	331	51.1%	40	51.3%	853	52.3%	109	49.1%
Governmental and Not-for-Profit	8	1.2%	3	3.8%	19	1.2%	4	1.8%
International	51	7.9%	3	3.8%	100	6.1%	7	3.2%
Managerial	95	14.7%	15	19.2%	213	13.1%	36	16.2%
Systems	12	1.9%	1	1.3%	35	2.1%	6	2.7%
Taxation	46	7.1%	4	5.1%	100	6.1%	16	7.2%
Other	7	1.1%	1	1.3%	20	1.2%	1	0.5%
Total	648	100.0%	78	100.0%	1,631	100.0%	222	100.0%

Panel B: Submissions and Acceptances by Method

	Year Ending May 31, 2011				Three-Year Term from June 1, 2008–May 31, 2011			
	Submissions		Acceptances and Conditional Acceptances		Submissions		Acceptances and Conditional Acceptances	
Primary Research Method	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Analytical	55	8.5%	3	3.8%	132	8.1%	21	9.5%
Empirical-Archival	468	72.2%	57	73.1%	1,204	73.8%	150	67.6%
Experimental	91	14.0%	11	14.1%	216	13.2%	35	15.8%
Field and Case Study	8	1.2%	3	3.8%	16	1.0%	5	2.3%
Survey	16	2.5%	4	5.1%	41	2.5%	10	4.5%
Other	10	1.5%	0	0.0%	22	1.3%	1	0.5%
Total	648	100.0%	78	100.0%	1,631	100.0%	222	100.0%

(continued on next page)

TABLE 3 (continued)

Panel C: Submissions and Acceptances by Subject Area Crossed with Method, Journal Year Ending May 31, 2011

Subject and	Auditing		Financial		Managerial		Taxation		All Other Subjects		Total	
Method	Submissions	Acceptances	Submissions	Acceptances	Submissions	Acceptances	Submissions	Acceptances	Submissions	Acceptances	Submissions	Acceptances
Analytical	7	0	22	2	15	1	5	0	6	0	55	3
	1%	0%	3%	3%	2%	1%	1%	0%	1%	0%	8%	4%
Empirical-	53	7	281	35	42	7	34	3	58	5	468	57
Archival	8%	9%	43%	45%	6%	9%	5%	4%	9%	6%	72%	73%
Experimental	35	3	22	3	24	3	6	1	4	1	91	11
	5%	4%	3%	4%	4%	4%	1%	1%	1%	1%	14%	14%
All Other	3	1	6	0	14	4	1	0	10	2	34	7
Methods	<1%	1%	1%	0%	2%	5%	<1%	0%	2%	3%	5%	9%
Total	98	11	331	40	95	15	46	4	78	8	648	78
	15%	14%	51%	51%	15%	19%	7%	5%	12%	10%	100%	100%

Panel D: Submissions and Acceptances by Subject Area Crossed with Method, Three-Year Editorial Term from June 1, 2008–May 31, 2011

Subject and	Auditing		Financial		Managerial		Taxation		All Other Subjects		Total	
Method	Submissions	Acceptances	Submissions	Acceptances	Submissions	Acceptances	Submissions	Acceptances	Submissions	Acceptances	Submissions	Acceptances
Analytical	21	3	56	10	35	6	10	2	10	0	132	21
	1%	1%	3%	5%	2%	3%	1%	1%	1%	0%	8%	9%
Empirical-	180	25	726	86	94	15	79	13	125	11	1,204	150
Archival	11%	11%	45%	39%	6%	7%	5%	6%	8%	5%	74%	68%
Experimental	82	12	55	11	50	8	8	1	21	3	216	35
	5%	5%	3%	5%	3%	4%	<1%	<1%	1%	1%	13%	16%
All Other	8	3	16	2	34	7	3	0	18	4	79	16
Methods	<1%	1%	1%	1%	2%	3%	<1%	0%	1%	2%	5%	7%
Total	291	43	853	109	213	36	100	16	174	18	1,631	222
	18%	19%	52%	49%	13%	16%	6%	7%	11%	8%	100%	100%

In Panels A and B:

Subject (Panel A) and method (Panel B) categories are as directed by the AAA Publications Committee. Manuscripts that overlap categories are assigned to the category best capturing the study's primary objective, as judged by the Senior Editor. To avoid double counting for invited revisions, the total of 648 unique submissions in each panel excludes submissions earlier within the year for which multiple decisions were recorded within the year on the same manuscript files.

In Panels C and D:

The top row of each "Subject and Method" indicates raw counts. The bottom row computes percentages of the 648 unique submissions for fiscal 2011 (Panel C) and the 1,631 unique submissions for the three-year editorial term from June 1, 2008–May 31, 2011 (Panel D), excluding earlier submissions of the same manuscript files to avoid double counting for invited revisions.

sufficiently diverse, nor does it even imply that *The Accounting Review* reflects a representative cross-section of accounting scholarship by area. Rather, Table 3 only implies that *The Accounting Review* reflects a representative cross-section of accounting scholarship submitted to *The Accounting Review*. Put differently, we run a fair game, with the odds of success roughly equivalent across areas, irrespective of the submitting author's topical or methodological focus. I like to think that this equivalence results from carefully choosing reviewers for each submission who are experts in the area of that submission, thereby subjecting each submission to the same scrutiny.

Clearly, authors exhibit self-selection preferences in determining the journals to which they direct their submissions. It may well be, for example, that authors in some areas (perhaps such as those who study accounting information systems or conduct field studies) choose not to submit to *TAR* because they are concerned that so few such studies get published in *TAR*. My point for the past three years has simply been that such beliefs and actions are a self-fulfilling prophecy. That is, those who refrain from submitting to *TAR* because they sense that *TAR* underrepresents their area will surely confirm their beliefs. And the occasional anecdote of taking a chance on *TAR* with a submission in an atypical area and then getting rejected anyway does not prove much, given an acceptance rate across the board of about 12 or 13 percent. The cold reality is that most submissions get rejected, including field studies as well as financial accounting capital markets studies. We simply get more of the latter than of the former. Those who infer biases against certain areas based on the articles *TAR* publishes are drawing an inference about a ratio (acceptance rates by area) by looking only at the numerator of that ratio. Table 3 documents the denominators, and I think the statistics are revealing.

To be sure, Table 3, Panel A clearly indicates that *TAR*'s modal submission and accepted article is in the area of financial accounting, comprising roughly half of our volume (52 percent of our three-year cumulative submissions since June 1, 2008 and 49 percent of our acceptances during that period). This relatively stable rate of about 50 percent financial accounting is a far cry from the "> 80 percent" financial accounting frequency incorrectly attributed to *The Accounting Review* in a recent article by Fogarty and Jonas (2010, 307), but it is still a large frequency.[7] Is it healthy for the Association's flagship journal to fill about half of its capacity with financial accounting research? I do not know the answer to that question, but I do know that we can only sculpt from the clay that is on the table.

Some critics who feel passionately that financial accounting research (especially of the capital markets variety) is overrepresented in the pages of *The Accounting Review* have challenged me to be more proactive in seeking out diversity and accepting more of this and less of that to reflect what the journal needs, irrespective of what the reviewers recommend. To those who hold these views, if I may borrow a cliché, "be careful what you wish for," as the editorial dictator who is benevolent to some will assuredly be malevolent to others. I would not trust any individual with that much power, including myself—I have neither nearly the time nor the expertise. Put differently, expert reviewers in the area of the submission are there for a reason.

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[7] Fogarty and Jonas (2010, 307) attribute their "> 80 percent" financial accounting assertion for *The Accounting Review* to comments I purportedly made in a talk I gave at the American Accounting Association New Faculty Consortium (NFC). I have checked my slides from the NFC presentations I gave in 2008, 2009, and 2010, in which I shared statistics such as those in Table 3, but no such slide shows a financial accounting frequency anywhere close to "> 80 percent." I trust that the error reflects an innocent misunderstanding, perhaps confusing the financial accounting percentage with the higher percentage for empirical-archival submissions across all subject areas, (see Table 3, Panels B, C, and D), although even that frequency has consistently been less than 80 percent. Whatever the source of the misunderstanding, it is important to set the record straight on this matter, as Fogarty and Jonas' (2010, 307) assertion was in partial support of their broader claim that financial accounting has "immiserated almost all other components" of accounting scholarship. It is questionable to me whether our actual experience of about 50 percent financial accounting submissions and acceptances is consistent with this broader claim.

To avoid misunderstanding, let me be clear that I think the *TAR* Senior Editor can and should take certain proactive measures to signal openness, as I did in 2008, for example, by appointing Shannon Anderson and Jim Hunton as coeditors in order to signal *TAR*'s openness to field-based and systems research, respectively. I have also been proactive in "fast-tracking" particularly innovative research, as I did, for instance, in concluding that two favorable reviews were sufficient to justify a first-round acceptance letter for an outstanding study by Madsen (2011) of the development of accounting standardization that I hope can rejuvenate top-tier interest in accounting history.[8] But beyond these measures, I must respectfully disagree with those who would have the *TAR* Senior Editor set aside the discipline of the journal's due process, as needed, to achieve that individual's interpretation of optimal diversity. For that matter, I could not look an assistant professor in the eye and tell him/her that his/her submission will not receive the same fair chance as other submissions because it happens to be a financial accounting study and we have too much of that already. What is too much or too little is up to the submitting community to decide. All an association journal can or should do, in my opinion, is to provide a level playing field for the community standards to play out. I believe that Table 3 makes the case that *The Accounting Review* achieves this objective. While broader concerns of insufficient diversity and insufficient innovation in the accounting literature may well be valid (e.g., see Hopwood 2007; Kaplan 2011), I can at least say with some conviction that *TAR* reflects the symptoms of those concerns rather than being the cause.

Table 4: Author Affiliations

Employer Affiliations

Table 4, Panel A tallies the employer affiliations of all authors who have published in *The Accounting Review*, with separate columns for Volume 86 (calendar 2011) and three-year cumulative totals for Volumes 84–86 (calendar years 2009–2011, roughly corresponding to the decision period of the outgoing editorial regime). Both columns exclude invited commentaries from AAA Presidential Scholar Lectures, which we accept by policy, and the cumulative column excludes two invited discussions from two research forums in 2009. As in prior Annual Reports, Panel A adjusts for coauthorship by attributing $1/k$ of an article to each of its k coauthors. If an author lists two affiliations, then Panel A allocates half of that author's $1/k$ share to each. Panel A lists institutions in rank order based on the cumulative three-year column, though the intent of the panel is to document diversity, not to confer bragging rights to those listed near the top. The fact that The University of Texas at Austin is the top-ranked university gives me an opportunity to provide two clarifications. First, Panel A does not adjust for faculty size, such that universities such as UT-Austin with larger research-active faculties have an obvious advantage in the rankings. Second, our conflict-of-interest policy precludes any *TAR* coeditor (including the Senior Editor) from serving as editor on a colleague's submission.

The 207 articles included in the three-year cumulative column of Table 4, Panel A reflect 165 different affiliations. Of course, these 165 affiliations have different article counts, ranging from 1/6 of an article (a three-coauthored article with two affiliations for one of the coauthors) at the low end to 8.42 articles at the high end over the three-year period tallied in the 2009–2011 cumulative

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[8] This anecdote should not be taken to imply that the publication outcome for Madsen (2011) rested on editorial intervention. Both reviews were unusually favorable. I simply decided that I could use the reviewers' support to justify a first-round conditional acceptance rather than a more prolonged revise-and-resubmit decision that might have delayed publication of this important study.

TABLE 4

Author Affiliations

Panel A: Employer Affiliations for Articles Published in Calendar Years 2009–2011

Employer Affiliation	Current-Year Coauthor-Adjusted Articles (Vol. 86, 2011)	Cumulative Articles in Vols. 84–86 (Calendar Years 2009-2011)
The University of Texas at Austin	2.33	8.42
University of Illinois at Urbana–Champaign	3.33	6.50
University of Michigan	3.33	6.00
Stanford University	1.33	5.50
University of Pennsylvania	0.33	5.00
University of Toronto	2.17	4.75
The University of Georgia	1.67	4.58
Harvard University	0.67	4.42
Michigan State University	0.25	4.17
The George Washington University	1.33	3.67
The University of Arizona	3.25	3.58
Dartmouth College	0.00	3.42
The University of Iowa	0.67	3.42
The University of Chicago	1.00	3.33
Indiana University	0.67	3.17
University of Southern California	1.92	3.08
University of Pittsburgh	0.33	3.00
Texas A&M University	1.25	2.92
University of Notre Dame	2.33	2.92
The Pennsylvania State University	0.83	2.83
The Ohio State University	1.92	2.75
The University of North Carolina at Chapel Hill	0.92	2.58
The University of Texas at Dallas	0.83	2.58
University of Melbourne	1.33	2.33
Nanyang Technological University	0.50	2.33
University of Missouri–Columbia	0.33	2.17
The University of New South Wales	0.33	2.17
Florida International University	0.00	2.08
University of California, Berkeley	0.50	2.00
The University of Mississippi	2.00	2.00
Singapore Management University	0.50	2.00
University of California, Los Angeles	0.25	1.92
Hong Kong University of Science and Technology	0.67	1.83
Maastricht University	1.00	1.83
Bentley University	1.00	1.75
The University of Oklahoma	0.00	1.75
Emory University	0.00	1.67
The Hong Kong Polytechnic University	0.00	1.67
Rice University	1.00	1.67
The University of Utah	0.00	1.67
University of Wisconsin–Madison	0.00	1.58
Baruch College–CUNY	1.50	1.50

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TABLE 4 (continued)

Panel A: (continued)

Employer Affiliation	Current-Year Coauthor-Adjusted Articles (Vol. 86, 2011)	Cumulative Articles in Vols. 84–86 (Calendar Years 2009-2011)
University of Florida	1.00	1.50
University of Houston	0.67	1.50
Brigham Young University	0.25	1.42
Drexel University	1.08	1.42
Erasmus University	0.67	1.42
Arizona State University	1.00	1.33
Miami University (Ohio)	0.33	1.33
University of Rochester	0.33	1.33
University of California, Irvine	0.50	1.25
The Chinese University of Hong Kong	1.25	1.25
University of Minnesota	0.00	1.25
Southern Methodist University	0.25	1.25
University of Alberta	0.00	1.17
New York University	0.83	1.17
Seoul National University	0.33	1.17
University of Virginia	0.00	1.17
Aarhus University	0.00	1.00
University of Arkansas	0.00	1.00
Universidad Carlos III de Madrid	0.00	1.00
Columbia University	0.50	1.00
Georgia Institute of Technology	0.00	1.00
Humboldt University–Berlin	0.00	1.00
Iowa State University	0.00	1.00
McGill University	0.00	1.00
National University of Singapore	0.00	1.00
University of New Hampshire	0.00	1.00
Northwestern University	0.67	1.00
Purdue University	0.00	1.00
Saint Louis University	0.00	1.00
Santa Clara University	0.00	1.00
Tel Aviv University	0.00	1.00
The University of Texas at Arlington	1.00	1.00
University of Washington	0.33	1.00
Washington University in St. Louis	0.00	1.00
The College of William and Mary	1.00	1.00
Xavier University	1.00	1.00
Concordia University	0.33	0.96
Korea University	0.42	0.92
University of South Carolina	0.33	0.92
The University of Alabama	0.00	0.83
Cornell University	0.00	0.83
Massachusetts Institute of Technology	0.00	0.83
University of Nevada, Las Vegas	0.50	0.83
University of Oregon	0.00	0.83
City University of Hong Kong	0.67	0.79

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TABLE 4 (continued)

Panel A: (continued)

Employer Affiliation	Current-Year Coauthor-Adjusted Articles (Vol. 86, 2011)	Cumulative Articles in Vols. 84–86 (Calendar Years 2009-2011)
Lancaster University	0.75	0.75
Duke University	0.00	0.67
George Mason University	0.33	0.67
Shanghai Jiaotong University	0.67	0.67
Shanghai University of Finance and Economics	0.67	0.67
University of South Florida	0.00	0.67
University of British Columbia	0.00	0.58
University of Connecticut	0.00	0.58
University of Massachusetts Amherst	0.33	0.58
University of Amsterdam	0.00	0.50
Boston University	0.00	0.50
University of Colorado at Boulder	0.50	0.50
Goethe University	0.00	0.50
University of Maryland	0.50	0.50
University of Massachusetts Lowell	0.50	0.50
Memorial University of Newfoundland	0.50	0.50
University of Miami	0.00	0.50
Norwegian School of Management	0.00	0.50
Rutgers University	0.50	0.50
Buffalo State College, SUNY	0.50	0.50
Towers Perrin	0.50	0.50
Tsinghua University	0.50	0.50
Utah State University	0.00	0.50
Washington State University	0.00	0.50
University of Waterloo	0.00	0.50
Yale University	0.50	0.50
University of Antwerp	0.00	0.33
The University of Auckland	0.00	0.33
The Australian National University	0.33	0.33
University of California, Davis	0.00	0.33
University of California, San Diego	0.00	0.33
Carnegie Mellon University	0.00	0.33
University of Central Florida	0.33	0.33
China Europe International Business School	0.00	0.33
University of Colorado at Denver	0.00	0.33
Colorado State University	0.00	0.33
Georgetown University	0.33	0.33
Georgia Southern University	0.33	0.33
Gradient Analytics, Inc.	0.00	0.33
HEC Paris	0.00	0.33
The University of Illinois at Chicago	0.33	0.33
Inha University	0.00	0.33
INSEAD	0.33	0.33
Lehigh University	0.00	0.33
University of Massachusetts Dartmouth	0.00	0.33

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TABLE 4 (continued)

Panel A: (continued)

Employer Affiliation	Current-Year Coauthor-Adjusted Articles (Vol. 86, 2011)	Cumulative Articles in Vols. 84–86 (Calendar Years 2009-2011)
McMaster University	0.00	0.33
Meijo University	0.00	0.33
North Carolina State University	0.00	0.33
Northern Illinois University	0.33	0.33
Northeastern University	0.00	0.33
Osaka University of Economics	0.00	0.33
Sungkyunkwan University	0.00	0.33
Syracuse University	0.00	0.33
Temple University	0.33	0.33
The University of Tennessee	0.00	0.33
Vanderbilt University	0.33	0.33
Virginia Commonwealth University	0.00	0.33
Virginia Polytechnic Institute and State University	0.00	0.33
Voyant Advisors, LLC	0.33	0.33
Worcester Polytechnic Institute	0.33	0.33
Ball State University	0.00	0.25
California State University, Fresno	0.25	0.25
Chapman University	0.00	0.25
Florida State University	0.25	0.25
The University of Hong Kong	0.00	0.25
Illinois State University	0.00	0.25
Indian School of Business	0.00	0.25
Kent State University	0.00	0.25
Mississippi State University	0.00	0.25
National Taiwan University	0.25	0.25
Oklahoma State University	0.00	0.25
San Diego State University	0.25	0.25
Tilburg University	0.00	0.25
Wuhan University	0.25	0.25
Barclays Global Investors	0.00	0.17
Copenhagen Business School	0.00	0.17
Interdisciplinary Center Herzliya	0.00	0.17
University of Southern Maine	0.00	0.17

Panel B: Ph.D.-Granting Affiliations for Articles Published in Calendar Years 2009–2011

Ph.D.-Granting Affiliation	Current-Year Coauthor-Adjusted Articles (Vol. 86, 2011)	Cumulative Articles in Vols. 84–86 (Calendar Years 2009-2011)
University of Michigan*	2.83	10.92
The University of Iowa*	4.83	10.67
Stanford University*	2.83	9.33
The University of Texas at Austin*	3.25	7.83
The University of North Carolina at Chapel Hill	1.83	6.08

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TABLE 4 (continued)

Panel B: (continued)

Ph.D.-Granting Affiliation	Current-Year Coauthor-Adjusted Articles (Vol. 86, 2011)	Cumulative Articles in Vols. 84–86 (Calendar Years 2009-2011)
University of Illinois at Urbana–Champaign*	2.67	5.75
Michigan State University*	2.50	5.67
The Ohio State University*	2.08	5.67
University of Washington*	1.92	5.42
University of Pennsylvania	3.00	5.33
University of Wisconsin–Madison*	2.17	5.25
Northwestern University	2.25	5.17
The Pennsylvania State University	1.00	5.00
University of California, Berkeley*	0.92	4.75
Cornell University*	0.50	4.25
Massachusetts Institute of Technology	1.00	4.25
Indiana University	1.67	4.17
Columbia University	1.17	4.00
The University of Arizona	1.92	3.42
New York University	0.33	3.17
The University of Chicago*	1.67	3.08
University of Minnesota*	0.00	3.00
University of Southern California	1.17	2.83
University of Missouri–Columbia	1.58	2.75
University of Rochester*	0.58	2.75
Washington University in St. Louis	0.50	2.75
Emory University	2.00	2.33
University of Oregon	0.67	2.25
Carnegie Mellon University*	1.00	2.17
Harvard University	1.00	2.17
University of Melbourne	1.00	2.00
University of Pittsburgh	1.00	2.00
Texas A&M University	0.33	2.00
University of Florida	0.00	1.92
University of Toronto	1.00	1.83
The University of British Columbia	0.92	1.75
The University of Georgia	0.25	1.75
University of Navarra, IESE Business School	1.50	1.75
Arizona State University	0.33	1.67
Hong Kong University of Science and Technology	1.33	1.67
Goethe University	0.00	1.50
Hebrew University	0.50	1.50
Yale University	0.50	1.50
Maastricht University	1.00	1.33
Nanyang Technological University	0.33	1.33
The University of New South Wales	0.00	1.33
University of California, Los Angeles	0.25	1.25
Lancaster University	1.25	1.25
Rutgers University	0.00	1.17
Tulane University	0.33	1.17

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TABLE 4 (continued)

Panel B: (continued)

Ph.D.-Granting Affiliation	Current-Year Coauthor-Adjusted Articles (Vol. 86, 2011)	Cumulative Articles in Vols. 84–86 (Calendar Years 2009-2011)
University of Waterloo	0.83	1.17
University of Colorado at Boulder	0.75	1.08
The University of Texas at Dallas	0.75	1.08
University of Amsterdam	0.00	1.00
Boston University	0.00	1.00
Concordia University	0.00	1.00
Free University of Berlin	0.00	1.00
Georgia Institute of Technology	1.00	1.00
University of New England (Australia)	0.00	1.00
Buffalo State College, SUNY	0.00	1.00
Tel Aviv University	0.00	1.00
Temple University	0.67	0.92
Oklahoma State University	0.00	0.83
The University of Alabama	0.00	0.83
The University of Auckland	0.00	0.83
La Trobe University	0.33	0.83
Tilburg University	0.33	0.83
University of Antwerp	0.00	0.67
City University of Hong Kong	0.00	0.67
Florida State University	0.00	0.67
Odense University	0.00	0.67
Syracuse University	0.33	0.67
Kent State University	0.00	0.58
Louisiana State University	0.00	0.58
University of Alberta	0.00	0.50
The George Washington University	0.00	0.50
Griffith University	0.00	0.50
University of Maryland	0.50	0.50
Norwegian School of Economics and Business Administration	0.00	0.50
Oxford University	0.50	0.50
Princeton University	0.00	0.50
The University of Texas at Arlington	0.00	0.50
University of Vienna	0.00	0.50
Drexel University	0.00	0.33
Duke University	0.33	0.33
Erasmus University	0.33	0.33
University of Essex	0.33	0.33
Georgia State University	0.00	0.33
Hong Kong Polytechnic University	0.33	0.33
Illinois State University	0.00	0.33
University of Manchester	0.00	0.33
University of Massachusetts Amherst	0.33	0.33
Nagoya City University	0.00	0.33
University of Nebraska	0.00	0.33

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TABLE 4 (continued)

Panel B: (continued)

Ph.D.-Granting Affiliation	Current-Year Coauthor-Adjusted Articles (Vol. 86, 2011)	Cumulative Articles in Vols. 84–86 (Calendar Years 2009-2011)
University of North Texas	0.00	0.33
Osaka City University	0.00	0.33
Purdue University	0.00	0.33
Seoul National University	0.00	0.33
University of Sheffield	0.00	0.33
Singapore Management University	0.33	0.33
University of South Carolina	0.33	0.33
University of South Florida	0.00	0.33
Virginia Polytechnic Institute and State University	0.00	0.33
University of Zurich	0.00	0.33
University of Arkansas	0.00	0.25
The University of Oklahoma	0.00	0.25
The University of Texas at San Antonio	0.00	0.25

Panel C: U.S. and Non-U.S. Submissions and Acceptances

	Journal Year Ending May 31, 2011		Cumulative from June 1, 2008 to May 31, 2011	
	Number (Percentage) of Submissions Representing Unique Manuscript Files with Decisions	Number (Percentage) of Acceptances	Number (Percentage) of Submissions Representing Unique Manuscript Files with Decisions	Number (Percentage) of Acceptances
U.S. Institutions	453.95 (70.1%)	62.95 (80.7%)	1,167.97 (71.6%)	178.67 (80.5%)
Non-U.S. Institutions	194.05 (29.9%)	15.05 (19.3%)	463.03 (28.4%)	43.33 (19.5%)

Panel D: Geographical Breakdown of non-U.S. Submissions and Acceptances, Journal Year Ending May 31, 2011

	Number (Percentage) of Submissions Representing Unique Manuscript Files with Decisions	Number (Percentage) of Acceptances
Canada	42.95 (6.6%)	4.00 (5.1%)
Mexico, Central, and South America	2.25 (0.3%)	0.00 (0.0%)
Europe	52.38 (8.1%)	4.13 (5.3%)
Middle East	13.03 (2.0%)	0.00 (0.0%)

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TABLE 4 (continued)

Panel D: (continued)

	Number (Percentage) of Submissions Representing Unique Manuscript Files with Decisions	Number (Percentage) of Acceptances
Africa	3.00 (0.5%)	0.00 (0.0%)
Australia and New Zealand	12.66 (2.0%)	1.25 (1.6%)
Asia	67.79 (10.5%)	5.67 (7.3%)
Total non-U.S.	194.05 (29.9%)	15.05 (19.3%)

Panel A reports author employer affiliations for all articles published in *The Accounting Review* in Volume 86 (calendar 2011) as well as the three-year cumulative totals for Volumes 84–86 (calendar years 2009–2011), excluding invited commentaries. For articles written by *k* coauthors, the table allocates 1/*k* of an article to each coauthor's affiliation. For authors indicating two affiliations, that author's 1/*k* share is allocated equally to both affiliations.

Panel B reports author Ph.D.-granting affiliations for the same periods and constructed in the same manner as in Panel A.

* An asterisk in Panel B signifies a university that Williams and Rodgers (1995) and Williams et al. (2006) identify as one of 15 "elite" schools.

Panel C reports data for international affiliations, allocating 1/*k* of each manuscript to each of *k* coauthors. Submissions data for the journal year ending May 31, 2011 reflect the 648 unique files for which decisions were reached in fiscal 2011, excluding files for which two or more decisions were reached within the year due to invitations to revise and resubmit. Cumulative submissions data from June 1, 2008 to May 31, 2011 reflect the 1,631 unique manuscript files for which a decision was logged in one of these years, but not double counting files for which a decision was reached in more than one year (due to revision). Acceptance data reflect all acceptances and conditional acceptances reached in the journal's fiscal years ending on May 31, including some acceptances that are scheduled for publication in early 2012. Hence, the acceptance data in this panel will not equal the total acceptances in Panels A and B, as those panels only reflect actual articles published in the respective calendar years, excluding forthcoming articles accepted for future publication.

Panel D shows the geographical breakdown for the fiscal 2011 non-U.S. submissions and acceptances tallied in Panel C.

column. Still, I would argue that having 165 affiliations represented on the pages of *The Accounting Review* over a three-year period is meaningful evidence of diversity.

To gain some sense of concentration from these statistics, the ten highest ranked affiliations tallied in Table 4, Panel A (cumulative column) account for 25.6 percent of the 207 total articles, which is nearly identical to the 25.3 percent top-ten statistic similarly computed for *The Accounting Review* by Swanson et al. (2007, 1262) in their analysis of concentration in articles published across four accounting journals and ten non-accounting business journals from 1990–2002. To put that statistic in perspective, Swanson et al. (2007, Table 2) report that *TAR* and *Contemporary Accounting Research* are the least concentrated of the four accounting journals they consider. As for the ten non-accounting business journals the authors use as a benchmark for comparison, Swanson et al. (2007, Table 2) find that *TAR* is more concentrated than four of these journals and is less concentrated than the other six.[9] The average top-ten percentage across all 14 business journals Swanson et al. (2007) consider is 30.8 percent, which exceeds *TAR*'s top-ten percentage of 25.3 percent. On balance, I interpret Swanson et al. (2007, Table 2) as indicating that *The Accounting Review* achieves a reasonably diverse representation of affiliations, at least in a relative sense, and Table 4, Panel A in this Annual Report suggests that this conclusion likely extends to the 2009–2011 period.[10]

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[9] Swanson et al. (2007, 1262) find that the top-ten concentration percentages range from 19.1 percent for the *Academy of Management Journal* to 48.9 percent for *Administrative Sciences Quarterly*.

Ph.D. Affiliations

Aside from any concern about authors' *employer* affiliations, some have been critical of perceived concentrations of authors' *Ph.D.-granting* affiliations (e.g., Williams et al. 2006; Heck and Jensen 2007). In particular, Williams et al. (2006, 792) express concern that the percentage of *TAR* authors with a doctorate from one of the 15 universities they identify as "elite" schools has increased from 52 percent over the period 1978–1983 and 47 percent over the period 1983–1987 to 62 percent "elite" graduates by 2005. Williams et al. (2006) define "elite" schools based on an earlier analysis of *TAR* editorial board composition by Williams and Rodgers (1995).[11] I do not endorse the connotation of elitism implied by the term used by these authors, but I will use their term for consistency.

To follow up on Williams et al.'s (2006) concern about the concentration of *TAR* authors among doctoral graduates of the 15 schools they label as "elite" programs, Table 4, Panel B tallies the doctoral alma maters of *TAR* authors published in calendar year 2011 and cumulatively from 2009–2011 (i.e., the same periods used to tally employer affiliations in Table 4, Panel A), attributing 1/*k* of each article to each of its *k* coauthors, and excluding invited AAA Presidential Scholar Lectures and two invited forum discussions.[12] Panel B lists programs in descending order of the frequency of doctoral affiliations by school. Focusing on the 15 programs that Williams and Rodgers (1995) and Williams et al. (2006) identify as the "elite" (as signified by asterisks in Table 4, Panel B), such Ph.D.-granting affiliations comprise 42 percent of the *TAR* articles published from 2009 to 2011. I cannot comment as to whether 42 percent is a large number or a small number, but presuming that Williams et al. (2006) use the same 1/*k* convention to adjust for coauthorship in the statistics they report,[13] the 42 percent concentration of *TAR* authors graduating from these 15 schools is lower in 2011 than the 62 percent figure reported by Williams et al. (2006, 792) for 2005, and is also lower than the 52 percent and 47 percent figures that Williams et al. appear to characterize as being (relatively) more reasonable "elite" concentrations from the late 1970s and early 1980s.

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[10] The University of Texas at Dallas provides a listing similar to Table 4, Panel A for 24 business journals at its website: http://som.utdallas.edu/top100Ranking/searchRanking.php?t=j. Using this website, I computed the top-ten percentages for six of these journals across the years 2009–2011, finding percentages close to those reported by Swanson et al. (2007, Table 2). Thus, I have no reason to believe that the concentration data or top-ten percentages have changed dramatically in the years subsequent to Swanson et al.'s (2007) study. Again, I interpret that study as indicating that *The Accounting Review* fares reasonably well in terms of the diversity of its authors' employer affiliations, at least relative to other top-tier journals both within and outside accounting.

[11] Williams et al. (2006, 791, footnote 15) omit the University of Michigan from their published list of "elite" schools. I presume this to be an inadvertent oversight, as the University of Michigan appears in Williams and Rodgers' (1995, 269) original list, and Williams et al. (2006) claim to analyze 15 schools but list only 14. Therefore, I include the University of Michigan in the analysis reported in this subsection.

[12] I classified authors currently enrolled in a doctoral program at the time of the acceptance as a (likely) graduate of that program, and I also classified one coauthor with no apparent doctoral degree according to the affiliation of his master's degree. These procedures do not materially affect the reported conclusions.

[13] To address the possibility that Williams et al.'s (2006) procedure might have differed from mine, I asked my assistant to tally the Ph.D. affiliations of *TAR* articles published in 2005, using the same 1/*k* convention to adjust for coauthorship that I used for 2009–2011. I get a 59 percent "elite" concentration for 2005 from my calculations, which is slightly less than the 62 percent reported by Williams et al. (2006, 792). I do not know the reason for the discrepancy, but I presume that the difference is not large enough to affect the overall conclusion that the "elite" concentration percentage has decreased in recent years. I did not attempt to recalculate the concentration percentages reported by Williams et al. (2006) for years other than 2005.

An alternative to adopting Williams et al.'s (2006) definition of 15 "elite" universities, which apparently has not changed since Williams and Rodgers (1995), is simply to tally the percentage of articles written by graduates that comprise the top 15 schools listed in Table 4, Panel B. Eleven of these schools overlap with Williams et al.'s (2006) "elite" list, but replacing the other four to define the top 15 as the first 15 schools listed in Panel B results in a concentration percentage of 47 percent—a number that is higher than the 42 percent from using Williams et al.'s "elite" list, but not markedly so.[14] The concentration percentage for this alternative definition of 15 schools is not directly comparable to those reported by Williams et al. (2006, 792), as their percentages would surely also increase if redefining the "elite 15" each year as that year's 15 top article generators, but the broader point is that, if Williams et al.'s (2006) comments about concentration of *TAR* articles among doctoral graduates from 15 or so programs are of concern, then that concern appears to be ebbing in recent years. More fundamentally, the "big picture" message from Table 4, Panel B, as I see it, is that graduates from 107 different doctoral programs have published at least once in *The Accounting Review* from 2009 to 2011. As with the employer affiliation listing in Table 4, Panel A, my sense is that this distribution indicates that *TAR* is reasonably diverse.

International Affiliations

Table 4, Panel C reports data on international diversity. Both for fiscal 2011 and across the three-year period from June 1, 2008 to May 31, 2011, authors employed outside the U.S. account for about 30 percent of *TAR*'s submissions and about 20 percent of its accepted articles. The cumulative excess of the non-U.S. relative submission frequency over the non-U.S. relative acceptance frequency is statistically significant ($\chi^2_{df=1} = 6.79$; $p = 0.01$, two-tailed). Although this difference is consistent with the belief that *TAR* is somewhat biased against non-U.S. authors, my belief is that it more likely reflects the existence of correlated underlying characteristics that are associated with perceptions of manuscript quality.

To drill a bit deeper, Table 4, Panel D documents the fiscal 2011 non-U.S. submissions and acceptances by major geographical region. Of the submissions, Canada (6.6 percent of total fiscal 2011 unique submissions), Europe (8.1 percent), and Asia (10.5 percent) constitute the most frequent contributors. Among the acceptances, every non-U.S. region experiences an acceptance percentage somewhat lower than its corresponding submission percentage, roughly proportional to the overall difference between approximately 30 percent non-U.S. submissions and 20 percent non-U.S. acceptances.[15] While I would ideally like to see the same equivalence in our distributions of international submissions and acceptances that we experience for different research topics and methods, I nevertheless find it noteworthy that, from the "glass half full" perspective, one in five successful *TAR* authors resides outside the U.S.

Table 5: Processing Time

Table 5 reports processing time data for the 708 editorial decisions reached from June 1, 2010 through May 31, 2011, defining "processing time" as the number of days from the submission to the date my assistant, Mary Capps, sends the decision letter. I will admit that I was disappointed to

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[14] Specifically, the "top 15" definition replaces Carnegie Mellon University, The University of Chicago, University of Minnesota, and University of Rochester from Williams et al.'s (2006) "elite" list with The University of North Carolina at Chapel Hill, Northwestern University, University of Pennsylvania, and The Pennsylvania State University from the top 15 schools listed in Table 4, Panel B.

[15] I also calculated the non-U.S. acceptance percentages by region over the three-year period from June 1, 2008 to May 31, 2011 to address the possibility that a small sample size might be distorting the percentages reported for the fiscal 2011 non-U.S. acceptances. The three-year acceptance percentages (untabulated) are generally consistent with the fiscal 2011 percentages.

TABLE 5

Processing Time from Date of Submission to Date of Sending the Decision Journal Year Ending May 31, 2011

Processing Time	Number of Manuscripts	Percentage	Cumulative Number of Manuscripts	Cumulative Percentage
≤ 15days	28	4.0%	28	4.0%
16–30 days	21	3.0%	49	6.9%
31–45 days	9	1.3%	58	8.2%
46–60 days	14	2.0%	72	10.2%
61–75 days	43	6.1%	115	16.2%
76–90 days	157	22.2%	272	38.4%
91–105 days	263	37.1%	535	75.6%
106–120 days	123	17.4%	658	92.9%
121–135 days	34	4.8%	692	97.7%
136–155 days	16	2.3%	708	100.0%

Mean processing time: 90 days.
Median processing time: 93 days.

learn that our mean processing time is exactly three months (90 days) and the median is 93 days, with both statistics comparable to those reported last year. My general sense is that two of those three months, on average, are spent waiting for the later of the two reviewers, with the third month necessary for front-end planning and reviewer selection as well as back-end evaluation and decision processing. One consolation is that 92.9 percent (call it 93 percent to make me feel better) of our submitting authors received a decision letter within four months of submitting. Thus, I believe that we have done a reasonable job controlling the "top end" of the processing distribution, even if the mean is larger than I would like to see. Of the 708 decisions, the very longest took 155 days (or just over five months) on a revision file for which we were unable to contact one of the continuing reviewers for several weeks. That reviewer then took three months to do the review, but the assessment was positive and the assigned editor accepted the paper for publication. So at least I am glad that our worst-case delay had a happy ending.

IV. NOTES OF THANKS AND RECOGNITION

As has been the case in each of my prior two Annual Reports, I will close with some well-deserved notes of thanks and recognition. First up this year is my family. My wife, Paula (of 27 years and counting), and three daughters, Karen (now a middle school band director in Leander, Texas), Nicole (a UT-Austin junior majoring in something called "Engineering Route to Business"), and Sara (a high school junior-to-be and drummer extraordinaire), have been more than patient with my seven-day workweeks. Karen and Nicole no longer live at home, but even their weekend visits have often found Dad staring at a computer screen and mumbling something about an author's ability to deal with "endogeneity issues." Each year I have reported that year's task for which I delayed way too long, thanks to *TAR*. In 2009 it was the deck lighting Paula had asked me to install since 2008, in 2010 it was getting my 1992 Camaro fixed, and during 2011 I have mastered the art of stalling on resetting some kitchen tiles near the steps to our living area. Well, those tiles are now as firm as the rock of Gibraltar—I did it last week, which, by no coincidence, was a week after Professor Harry Evans started getting the new submissions on June 1. I have gained so much from this job, but lost weekends will not be among the things I miss. Now that things are lightening up a bit, I may even decide to reach a truce with our new dog, Biscuit.

Second, I must thank Mary Capps, the source of all those "REMINDER—PLEASE REPLY" emails countless reviewers have received. In three years of processing over 2,000 submissions, not once has Mary inadvertently divulged a reviewer's name to an author—she is meticulously careful, and I am most grateful for that care. As members of our Editorial Board know, Mary graduated this spring with a master's degree in information science, having taken one course each and every term, while holding down a full-time job for *The Accounting Review*. The reason the Editorial Board members know this is that I sent them a sneaky email the night before Mary's graduation asking them to send Mary a congratulatory email with a deceptive subject line such as "Need an additional three months to do the review." It worked like a charm, and my understanding is that Mary printed about 100 of them for her scrapbook. I will miss her humor, her persistence, and her patience with my control-freak tendencies.

Third, I thank UT-Austin Ph.D. student Tracie Majors, my doctoral research assistant, who, over the past three years, has tirelessly researched potential reviewers for more than 1,500 new submissions for my consideration. Some might have thought it risky to engage a first-year doctoral student in such an activity, but making that move in early 2008 was probably the smartest decision I made as Senior Editor. After some initial training and an amazingly fast learning curve, Tracie has become a walking encyclopedia of scholarly interests. You may not know who Tracie is, but if you are an active researcher in accounting, Tracie most likely knows who you are, she knows what you have published, and she also knows the positions reflected in your writings on controversial topics such as conservatism, the pricing of accruals quality, and the like. If we have succeeded in providing submitting authors with reasonably well-qualified and independent reviewers, Tracie is much of the reason why.

Fourth, I thank the 13 outstanding professionals who have joined me in assuming editorial responsibilities for *The Accounting Review* from June 2008 to May 2011: Shannon Anderson, Harry Evans, Jim Hunton, Kathryn Kadous, Sanjay Kallapur, Ranjani Krishnan, Laureen Maines, Paul Newman, Tom Omer, Wayne Thomas, Mark Trombley, Beverly Walther, and Paul Zarowin. Two of these individuals, Sanjay Kallapur and Paul Newman, assumed the responsibilities of Senior Associate Dean at their respective colleges during the term, and a third, Laureen Maines, became Department Chair. Yet, all 13 of them stuck it out for the full three years, and it would seem that Harry Evans and Beverly Walther have not quite had enough, as they are continuing to the next term. In planning for my term as *TAR* Senior Editor back in 2007, I spent three or four days scouring the reviewer records that former Senior Editor Dan Dhaliwal kindly gave me, with the goal of identifying the most productive, timely, professional, and balanced reviewers I could possibly find. I asked those 13 people to become my coeditors, and they agreed. Thanks so much.

Fifth, a peer-reviewed journal is nothing without its reviewers. To the 130 Editorial Board members who have completed four, five, or six reviews for *TAR* each and every year in addition to the many review requests they must be receiving from other journals, I cannot thank you enough. In addition, I would be remiss not to thank the additional 453 *ad hoc* reviewers who completed one or more reviews for *TAR* during the fiscal year ending May 31, 2011. Continuing a tradition I started in 2009, I thank them by name in Appendix A.[16] There is no way that *The Accounting Review* could maintain a two-reviewer system without the willing assistance of *ad hoc* reviewers, and as I have stated before, they are the journal's unsung heroes. Thank you.

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[16] One of our thanked *ad hoc* reviewers is Professor Young Kwon of Singapore Management University, who completed a *TAR* review in 27 days in Fall 2010. Professor Kwon passed away on May 7, 2011 after battling an illness. Our thoughts and sympathies go out to his family, friends, and colleagues.

New this year, I thought I would provide special commendation to our most productive reviewers in terms of both quantity and timeliness by compiling an "Honor Roll" of particularly distinguished recognition. To keep it relatively objective, the Honor Roll identifies, in general, Editorial Board members who completed ten or more reviews between June 1, 2008 and May 31, 2011 within 45 days of the request.[17] For *ad hoc* reviewers, I lowered the threshold to at least eight timely (i.e., ≤ 45 days) reviews within the same three-year period, reflecting the fact that we ask *ad hoc* reviewers less often by definition.[18] The Editorial Board Honor Roll is in Table 6, Panel A, and the *ad hoc* reviewer Honor Roll is in Panel B. Let me hasten to add, however, that the reviewers not on the Honor Roll still deserve our heartfelt thanks. Each Editorial Board name on the inside cover and each *ad hoc* reviewer listed in Appendix A has performed a tremendously valuable service, for which I am deeply grateful.

Sixth, I thank the American Accounting Association, including the outstanding professional staff in Sarasota as well as the generous academic volunteers who serve on the AAA Publications Committee and Board of Directors. The danger of naming names is that one invariably leaves someone out who should be thanked, but with no slight intended to those not named, the AAA staff professionals Mary and I have dealt with most often on a day-to-day basis are AAA Publications Coordinator Lisa Habblitz, whose professionalism is as appreciated as is her patience and flexibility, and AAA Financial Data Coordinator Man Fong, who makes the submission fee process seamless. I have also consulted with AAA Executive Director Tracey Sutherland on various policy matters over the term of my editorship. Tracey has consistently been the voice of reason and diplomacy; if she ran for office, I would vote for her without hesitation. Speaking of consultation, outgoing AAA Publications Committee Chair Jean Bedard has been very thoughtful in giving me her perspectives on special situations that invariably arise.

Seventh, I thank The University of Texas at Austin. I cannot think of many other jobs in which most of the employee's working hours are for the benefit of an organization other than the person's employer. Although I have taught undergraduate auditing each year of my editorship, I have often felt over the past three years that most of my working effort is on behalf of the American Accounting Association, although with the financial and moral support of The University of Texas at Austin throughout. Along this line, I would be remiss not to also acknowledge and express my gratitude for the support of the Randal B. McDonald Chair in Accounting that I have the privilege of holding at The University of Texas at Austin. I never met the late Mr. McDonald, although I did get the chance to chat with two of his sons and their families last fall. My understanding is that part of Mr. McDonald's storied accounting career involved the popularization of full-cost accounting in the oil and gas industry. Although it never occurred to me until just now, editing a journal is a lot like drilling for oil—one must invest in several dry holes in order to find a few gushers. I thank the McDonald family for supporting the "full cost" of my endeavors as *TAR* editor.

Eighth, I thank the community of scholars for entrusting me with the responsibility of serving as *TAR* Senior Editor. I have received my share of criticism from disgruntled authors and constituents, which I guess goes with the territory, but I would like to think that I have made more friends than adversaries during the course of my editorial term. The correspondence that has meant the most to me is when an occasional rejected author has sent a note to indicate that, although disappointed in the outcome, the author found the feedback to be constructive and the process fair.

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[17] The "in general" qualification in this sentence is to acknowledge that I used common sense for a couple of borderline cases, such as including an Editorial Board member who completed nine reviews within 45 days and a tenth in 47 days, or including a member in a lower-frequency research area who received only nine requests in the course of the editorial term and completed all nine within a month.

[18] One *ad hoc* reviewer, Professor Scott Dyreng of Duke University, would have made the Honor Roll even for the more stringent standards that I applied to Editorial Board members.

TABLE 6

Honor Roll of *The Accounting Review*'s Most Frequent and Timely Reviewers

Panel A: Editorial Board Members with Ten or More Reviews Submitted within 45 Days over the Three-Year Editorial Term, June 1, 2008–May 31, 2011

Anwer Ahmed	Texas A&M University
Benjamin Ayers	The University of Georgia
William Baber	Georgetown University
Ramji Balakrishnan	The University of Iowa
Linda Bamber	The University of Georgia
Brian Bushee	University of Pennsylvania
Jeffrey Callen	University of Toronto
Mary Ellen Carter	Boston College
Paul Chaney	Vanderbilt University
Qiang Cheng	University of Wisconsin–Madison
Michael Clement	The University of Texas at Austin
Hemang Desai	Southern Methodist University
David Farber	University of Missouri–Columbia
Jennifer Francis	Duke University
Jere Francis	University of Missouri–Columbia
James Frederickson	University of Melbourne
Frank Gigler	University of Minnesota
David Guenther	University of Oregon
Jeffrey Hales	Georgia Institute of Technology
Gilles Hilary	INSEAD
Chris Hogan	Michigan State University
Ole-Kristian Hope	University of Toronto
Richard Houston	The University of Alabama
Raffi Indjejikian	University of Michigan
Debra Jeter	Vanderbilt University
Inder Khurana	University of Missouri–Columbia
Michael Kimbrough	University of Maryland
April Klein	New York University
Robert Knechel	University of Florida
Lisa Koonce	The University of Texas at Austin
Jayanthi Krishnan	Temple University
Robert Libby	Cornell University
Joan Luft	Michigan State University
Edward Maydew	The University of North Carolina at Chapel Hill
Sarah McVay	The University of Utah
Kenneth Merchant	University of Southern California
Gregory Miller	University of Michigan
Lillian Mills	The University of Texas at Austin
Brian Mittendorf	The Ohio State University
Karen Nelson	Rice University
Sean Peffer	University of Kentucky
Kathy Petroni	Michigan State University,
Morton Pincus	University of California, Irvine
Suresh Radhakrishnan	The University of Texas at Dallas
Kannan Raghunandan	Florida International University
John Robinson	The University of Texas at Austin

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TABLE 6 (continued)

Catherine Shakespeare	University of Michigan
Lakshmanan Shivakumar	London Business School
Mark Soliman	University of Washington
Mary Harris Stanford	Texas Christian University
Hun-Tong Tan	Nanyang Technological University
Senyo Tse	Texas A&M University
Jennifer Tucker	University of Florida
Michael Wilkins	Texas A&M University
Richard Willis	Vanderbilt University
Arnold Wright	Northeastern University
Teri Lombardi Yohn	Indiana University
Mark Zimbelman	Brigham Young University

Panel B: *Ad Hoc* Reviewers with Eight or More Reviews Submitted within 45 Days over the Three-Year Editorial Term, June 1, 2008–May 31, 2011

Bruce Billings	Florida State University
Shijun Cheng	University of Maryland
Daniel Cohen	The University of Texas at Dallas
Scott Dyreng	Duke University
Brooke Elliott	University of Illinois at Urbana–Champaign
Jacqueline Hammersley	The University of Georgia
Amy Hutton	Boston College
John Jiang	Michigan State University
Volker Laux	The University of Texas at Austin
Joshua Livnat	New York University
Michal Matějka	Arizona State University
Brian Miller	Indiana University
Richard Morton	Florida State University
Ed Riedl	Harvard University
Isabel Wang	Michigan State University
Ryan Wilson	The University of Iowa

Serving as the Senior Editor of the AAA's flagship journal has been a privilege, and I have learned a great deal from the experience.

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APPENDIX A

TAR Ad Hoc Reviewers
June 1, 2010–May 31, 2011

Lawrence Abbott	University of Wisconsin–Milwaukee
Christopher Agoglia	University of Massachusetts Amherst
Kris Allee	Michigan State University
Michael Alles	Rutgers University
Eli Amir	London Business School
Christopher Armstrong	University of Pennsylvania
Sharad Asthana	The University of Texas at San Antonio
Brad Badertscher	University of Notre Dame
Mark Bagnoli	Purdue University
Steven Balsam	Temple University
Michael Bamber	The University of Georgia
Rajiv Banker	Temple University
Ran Barniv	Kent State University
Mary Barth	Stanford University
Jan Barton	Emory University
Abhijit Barua	Florida International University
Mark Beasley	North Carolina State University
Bruce Behn	The University of Tennessee
Messod Beneish	Indiana University
Daniel Bens	The University of Arizona
Anne Beyer	Stanford University
Sreedhar Bharath	Arizona State University
Neil Bhattacharya	Southern Methodist University
Sanjeev Bhojraj	Cornell University
Gary Biddle	The University of Hong Kong
Bruce Billings	Florida State University
Jasmijn Bol	University of Illinois at Urbana–Champaign
Sarah Bonner	University of Southern California
Mary Brooke Billings	New York University
Erv Black	Brigham Young University
Christine Botosan	The University of Utah
Robert Bowen	University of Washington
Kendall Bowlin	The University of Mississippi
Joe Brazel	North Carolina State University
Billy Brewster	The University of Texas at Arlington
Francois Brochet	Harvard University
Jason Brown	Indiana University
Jennifer Brown	Arizona State University
Gregory Brown	The University of North Carolina at Chapel Hill
Steve Buchheit	Texas Tech University
David Burgstahler	University of Washington
Jeffrey Burks	University of Notre Dame
Robert Bushman	The University of North Carolina at Chapel Hill
Donal Byard	Baruch College–CUNY
Brian Cadman	The University of Utah
Steven Cahan	The University of Auckland
Andrew Call	The University of Georgia
Dennis Campbell	Harvard University

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APPENDIX A (continued)

Eddy Cardinaels	Tilburg University
Tina Carpenter	The University of Georgia
Elizabeth Carson	The University of New South Wales
Judson Caskey	University of California, Los Angeles
Gavin Cassar	University of Pennsylvania
Marcus Caylor	University of South Carolina
Hsihui Chang	Drexel University
Xin (Simba) Chang	Nanyang Technological University
Chih-Ying Chen	Singapore Management University
Clara Xiaoling Chen	University of Illinois at Urbana–Champaign
Jeff (Zeyun) Chen	University of Colorado at Boulder
Kevin Chen	Hong Kong University of Science and Technology
Peter Chen	Hong Kong University of Science and Technology
Qi Chen	Duke University
Shimin Chen	China Europe International Business School
Agnes Cheng	Louisiana State University
Shijun Cheng	University of Maryland
Jong-Hag Choi	Seoul National University
Ted Christensen	Brigham Young University
Bryan Church	Georgia Institute of Technology
Peter Clarkson	The University of Queensland
C. Bryan Cloyd	Virginia Polytechnic Institute & State University
Daniel Cohen	The University of Texas at Dallas
Jeffrey Cohen	Boston College
Lauren Cohen	Harvard University
Dan Collins	The University of Iowa
Carlos Corona	Carnegie Mellon University
Andrew Cuccia	The University of Oklahoma
Masako Darrough	Baruch College–CUNY
Somnath Das	University of Illinois at Chicago
Sudipto Dasgupta	Hong Kong University of Science and Technology
Holger Daske	University of Mannheim
Paquita Davis-Friday	Baruch College–CUNY
Gus De Franco	University of Toronto
Henri Dekker	Vrije University Amsterdam
Aiyesha Dey	University of Minnesota
Dan Dhaliwal	The University of Arizona
Ilia Dichev	Emory University
Shane Dikolli	Duke University
Ming Dong	York University
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This table lists all *ad hoc* reviewers who submitted at least one review report between June 1, 2010 and May 31, 2011. It does not include the 130 members of the Editorial Advisory and Review Board, as those names are listed separately in the inside cover material of each issue. *Ad hoc* reviewers whose reports were submitted after May 31, 2011 will be included in next year's report.

EDITORIAL POLICY AND STYLE INFORMATION

EDITORIAL POLICY

According to the policies set by the Publications Committee (which were endorsed by the Executive Committee and were published in the *Accounting Education News*, June 1987), *The Accounting Review* "should be viewed as the premier journal for publishing articles reporting the results of accounting research and explaining and illustrating related research methodology. The scope of acceptable articles should embrace any research methodology and any accounting-related subject, as long as the articles meet the standards established for publication in the journal ... No special sections should be necessary. The primary, but not exclusive, audience should be—as it is now—academicians, graduate students, and others interested in accounting research."

The primary criterion for publication in *The Accounting Review* is the significance of the contribution an article makes to the literature. Topical areas of interest to the journal include accounting information systems, auditing and assurance services, financial accounting, management accounting, taxation, and all other areas of accounting, broadly defined. The journal is also open to all rigorous research methods.

The efficiency and effectiveness of the editorial review process is critically dependent upon the actions of both authors submitting papers and the reviewers. Authors accept the responsibility of preparing research papers at a level suitable for evaluation by independent reviewers. Such preparation, therefore, should include subjecting the manuscript to critique by colleagues and others and revising it accordingly prior to submission. The review process is not to be used as a means of obtaining feedback at early stages of developing the research.

Reviewers and editors are responsible for providing constructive and prompt evaluations of submitted research papers based on the significance of their contribution and on the rigor of analysis and presentation.

MANUSCRIPT PREPARATION AND STYLE

The Accounting Review's manuscript preparation guidelines follow *The Chicago Manual of Style* (15th ed.; University of Chicago Press). Another helpful guide to usage and style is *The Elements of Style*, by William Strunk, Jr., and E. B. White (Macmillan). Spelling follows *Webster's Collegiate Dictionary.*

FORMAT

1. All manuscripts should be formatted in 12-point font on 8 1/2 × 11" paper and should be double-spaced, except for indented quotations.
2. Manuscripts should be as concise as the subject and research method permit, generally not to exceed 7,000 words.
3. Margins should be at least one inch from top, bottom, and sides.
4. To promote anonymous review, authors should not identify themselves directly or indirectly in their papers or in experimental test instruments included with the submission. Single authors should not use the editorial "we".
5. A cover page should show the title of the paper, all authors' names, titles and affiliations, email addresses, and any acknowledgments.
6. The American Accounting Association encourages use of gender-neutral language in its publications.

Pagination: All pages, including tables, appendices and references, should be serially numbered. Major sections should be numbered in Roman numerals. Subsections should not be numbered.

Numbers: Spell out numbers from one to ten, except when used in tables and lists, and when used with mathematical, statistical, scientific, or technical units and quantities, such as distances, weights and measures. For example: *three days; 3 kilometers; 30 years.* All other numbers are expressed numerically.

Percentages and Decimal Fractions: In nontechnical copy use the word percent in the text.

Hyphens: Use a hyphen to join unit modifiers or to clarify usage. For example: *a cross-sectional equation; re-form.* See *Webster's* for correct usage.

Keywords: The abstract must be followed by at least three keywords to assist in indexing the paper and identifying qualified reviewers.

ABSTRACT/INTRODUCTION

An Abstract of about 100 words (150 maximum) should be presented on a separate page immediately preceeding the text. The Abstract should concisely inform the reader of the manuscript's topic, its methods, and its findings. The Keywords statement should appear immediately below the Abstract. The text of the paper should start with a section labeled "I. Introduction," which provides more details about the paper's purpose, motivation, methodology, and findings. Both the Abstract and the Introduction should be relatively nontechnical, yet clear enough for an informed reader to understand the manuscript's contribution. The manuscript's title, but neither the author's name nor other identification designations, should appear on the Abstract page.

TABLES AND FIGURES

The author should note the following general requirements:

1. Each table and figure (graphic) should appear on a separate page and should be placed at the end of the text. Each should bear an Arabic number and a complete title indicating the exact contents of the table or figure. Tables and figures should define each variable. The titles and definitions should be sufficiently detailed to enable the reader to interpret the tables and figures without reference to the text.
2. A reference to each graphic should be made in the text.
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4. Graphics should be reasonably interpreted without reference to the text.
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Equations: Equations should be numbered in parentheses flush with the right-hand margin.

DOCUMENTATION

Citations: Within-text citations are made using an author-year format. Cited works must correspond to the list of works listed in the "References" section. Authors should make an effort to include the relevant page numbers in the within-text citations.

1. In the text, works are cited as follows: author's last name and year, without comma, in parentheses. For example: one author, (Berry 2003); two authors, (Fehr and Schmidt 2003); three or more authors, (Dechow et al. 1998); more than one work cited, (Cole and Yakushiji 1984; Dechow et al. 1995; Levitt 1998); with two works by the same author(s), (Nelson 2003, 2005).
2. Unless confusion would result, do not use "p." or "pp." before page numbers. For example, (Dechow and Dichev 2002, 41–42).
3. When the reference list contains two or more works by the same author (as the only author or first of two or more authors) published in the same year, the suffix a, b, etc., is appended to the date in the within-text citations and in the "References" section. For example, (Johansson 2004a, 2004b, 2004c; Baiman and Rajan 2002a, 2002b; Dhaliwal et al. 2005a, 2005b).
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5. Citations to institutional works should use acronyms or short titles where practicable. For example: (NCFFR, The Treadway Commission 1987).
6. If the paper refers to statutes, legal treatises, or court cases, citations acceptable in law reviews should be used.

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Sample entries are as follows:

Baiman, S., and M. Rajan. 2002a. The role of information and opportunism in the choice of buyer-supplier relationships. *Journal of Accounting Research* 40 (2): 247–278.

Baiman, S., and M. Rajan. 2002b. Incentive issues in inter-firm relationships. *Accounting, Organizations and Society* 27 (3): 213–238.

Berry, R. 2003. Testimony before the Senate Committee on Homeland Security and Governmental Affairs Permanent Subcommittee on Investigations. November 18. Available at: http://hsgac.senate.gov/files/111803berry.pdf.

Cohen, D., A. Dey, and T. Lys. 2005. The Sarbanes Oxley Act of 2002: *Implications for Compensation Structure and Risk-Taking Incentives of CEOs.* Working paper, New York University, University of Chicago, and Northwestern University.

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Dechow, P. M., R. Sloan, and A. Sweeney. 1995. Detecting earnings management. *The Accounting Review* 70 (2): 193–225.

Dechow, P. M., S. P. Kothari, and R. L. Watts. 1998. The relation between earnings and cash flows. *Journal of Accounting and Economics* 25: 133–168.

Dechow, P. M., and I. Dichev. 2002. The quality of accruals and earnings: The role of accrual estimation errors, *The Accounting Review* 77 (Supplement): 35–59.

Dhaliwal, D., Erickson, and O. Li. 2005a. Shareholder income taxes and the relation between earnings and returns. *Contemporary Accounting Research* 22: 587–616.

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Maggi, G. 1999. The value of commitment with imperfect observability and private information. *RAND Journal of Economics* (Winter) 30: 555–574.

National Commission on Fraudulent Reporting (the Treadway Commission). 1987. *Report of the National Commission on Fraudulent Financial Reporting.* Washington, D.C.: NCFFR.

Nelson, M. W. 2003. Behavioral evidence on the effects of principles- and rules-based standards. *Accounting Horizons* 17 (1): 91–104.

Nelson, M. W. 2005. A review of experimental and archival conflicts-of-interest research in auditing. In *Conflicts of Interest: Challenges and Solutions in Business, Law, Medicine, and Public Policy,* edited by D. A. Moore, D. M. Cain, G. Loewenstein, and M. H. Bazerman. Cambridge, U.K.: Cambridge University Press.

Rigdon, E. E., R. E. Schumacker, and W. Wothke. 1998. A comparative review of interaction and nonlinear modeling. In *Interaction and Nonlinear Effects in Structural Equation Modeling,* edited by R. E. Schumacker, and G. A. Marcoulides, 1–16. Mahwah, NJ: Erlbaum Associates.

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U.S. House of Representatives. 2002. The Sarbanes-Oxley Act of 2002. Public Law 107-204 [H. R. 3763]. Washington, D.C.: Government Printing Office.

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NOVEMBER 2011 PLACEMENT ADS

The deadline for free position ads to be included in this section is two months prior to the date of publication. *The Accounting Review* is published in January, March, May, July, September, and November. Position ads in the "Placement Ads" are free with the purchase of a job posting in the AAA Career Center. For more information on how to purchase a job posting in the Career Center and receive your free position ad in *The Accounting Review*, go to the AAA website at http://aaahq.org and click on "Career Center," or call our office at 941-921-7747.

UNIVERSITY OF SAO PAULO, Department of Accounting and Actuarial Sciences has one position at the level of Assistant/Associate/Full Professor and one post-doctoral position. Positions will begin in Spring or Fall 2012. Courses are to be taught in English (knowledge of Portuguese is not required). Competitive salary is offered, according to the rank/position, along with additional research-related funding and benefits. Our department offers both undergraduate (B.S. Accounting and B.S. Actuary) and graduate programs (Master's and Doctoral degrees in Accounting) in a rich research-oriented environment. The University of Sao Paulo (USP), a tuition-free institution, is the largest higher education and research institution in Brazil, with more than 88,000 students, 15,300 staff members, and 5,700 faculty members, and a state budget of about US$2 billion per year. São Paulo, one of the largest cities in the world (with about 20 million people), is Brazil's business powerhouse and cosmopolitan city, representing a powerful cultural hub for Latin America. Candidates should have a completed (or close to being completed) Ph.D. with focus on Accounting or related areas. Applicants are expected to have a demonstrated potential for, or history of, outstanding research and strong teaching skills. Requirements are aligned with the rank/position. Applicants should send cover letter, *CV*, samples of research, and three references via email with attachments (Word or PDF files preferred) to Prof. Edgard Cornachione (edgardbc@usp.br). Applications are invited until the right candidates are found.

CENTRAL MICHIGAN UNIVERSITY, College of Business Administration, School of Accounting, is accepting applications for a tenure-track Assistant/Associate Professor position in accounting starting in August 2012 or January 2013. Principal responsibilities include teaching undergraduate and graduate courses in accounting. Normal teaching load is nine credit hours per semester. Some courses are taught online. You must submit an online application at: http//www.jobs.cmich.edu. Required: A doctorate from an AACSB-accredited school with a major in Accounting, or ABD and in the final stages of dissertation completion; evidence of teaching effectiveness in accounting courses at the university level; and a strong research agenda. Preferred: A professional certification (CPA, CMA, CIA) and evidence of online course development and delivery. CMU, an AA/EO institution, strongly and actively strives to increase diversity within its community (see http://www.cmich.edu/aaeo/).

LAMAR UNIVERSITY, Department of Accounting and Business Law is seeking to fill two tenure-track positions at the Assistant/Associate Professor level. Tax is preferred for one position; other areas of specialization will be considered for the second. However, candidates must be able to teach multiple content areas at both the graduate and undergraduate level. Applicants should demonstrate a record of excellence in (or potential for) innovative teaching, quality published/publishable research, service to the university/community, as well as a desire to build a quality accounting program. Individuals with an LLM in Taxation and a commitment to research will also be considered. Official transcripts are required at the time of employment. Positions will be filled pending available funding. Applications must be filled through the LU Human Resources website. For a detailed job description and to submit application, visit: https://jobs.lamar.edu. The successful candidate must have a Ph.D. (or ABD near completion) from an AACSB-accredited program or from an institution with an equivalent reputation. This position is security-sensitive and thereby subject to the provisions of the Texas Education Code §51.215, which authorizes the employer to obtain criminal history record information. Lamar is an AA/EEO/ADA employer committed to excellence through diversity.

SOUTHERN ILLINOIS UNIVERSITY CARBONDALE, School of Accountancy is accepting applications for three tenure-track positions (Assistant/Associate Professor) starting August 16, 2012. Accounting specialties desired are Financial and Systems but quality applicants in other areas will be considered. Applicants must have a strong commitment to a quality research program and excellent teaching. For senior rank the applicant must have an established research record in premier and high-quality publications. Research responsibilities will include working with doctoral students. Teaching responsibilities will include participation in the undergraduate, M.Acc., and Ph.D. programs. Applicant should have completed all requirements for the doctorate or appropriate terminal degree at effective date of employment. For more details see our ad on the AAA Career Center site. Submit letter of application, resume, and contact information for three references by email to: eod@business.siuc.edu, or USPS mail to: Dr. Ed O'Donnell, Search Committee Chair, School of Accountancy, COBA-86-PN, Mail Code 4631, Southern Illinois University Carbondale, 1025 Lincoln Drive, Carbondale, IL 62901. Phone: (618) 453-2289; Fax (618) 453-1411. Review of applications will begin September 1, 2011 and continue until the positions are filled. SIUC is an Affirmative Action/Equal Opportunity employer that strives to enhance its ability to develop a diverse faculty and staff and to increase its potential to serve a diverse student population. All applications are welcomed and encouraged and will receive consideration.

FORT HAYS STATE UNIVERSITY seek candidates for Assistant Professor of Accounting. This is a nine-month, tenure-track position. The candidate accepted for this position will be expected to teach 12 hours per semester primarily at the undergraduate level, engage in scholarly research and publication, participate in departmental and university activities, and provide academic advising. Qualifications: Ph.D. in accounting from an AACSB-accredited school preferred. Will consider ABD status with required completion of Ph.D. within three years of reaching ABD status, with initial appointment as Instructor until completion of Ph.D. Salary and academic rank will be commensurate with qualifications. Application Procedure: Candidates should send application materials to: Dr. Carl D. Parker, Department of Economics, Finance, and Accounting, 600 Park Street, Hays KS 67601-4099; or via email to: efa@fhsu.edu. A complete application includes a letter of application, *curriculum vitae*, three or more references with contact information, copies of unofficial transcripts showing courses taken for graduate credit, a sample of written work, and evidence of teaching effectiveness. A statement of one's teaching philosophy is useful but not required. Review of applications will occur until position is filled. Fort Hays State University is an Affirmative Action/Equal Opportunity Employer. Women, minorities, persons with disabilities, and veterans are encouraged to apply.

WRIGHT STATE UNIVERSITY Raj Soin College of Business invites applications for a tenure-track Assistant/Associate Professor position in the Department of Accountancy to begin as early as September 1, 2011, but no later than August 15, 2012. ABDs will be considered at the Assistant rank, Ph.D.s or equivalent degree preferred. Must have Ph.D. or equivalent degree and an outstanding record of scholarship to be considered for the Associate rank. All applicants must be AACSB Academically Qualified and should have a strong commitment to scholarship, teaching excellence, and service. Responsibilities include teaching undergraduate and graduate classes in Accountancy. All areas of interest will be considered, but financial accounting, cost accounting, and auditing are areas with the greatest needs. The Raj Soin College of Business and the Department of Accountancy are both accredited by AACSB-International. First review of applications will begin immediately and will continue until the position is filled. To apply, send a letter of application, *vita*, and evidence of teaching effectiveness to: http://jobs.wright.edu/postings/4202. Wright State is an EO/AA Employer.

ALFRED UNIVERSITY, College of Business invites applications for a tenure-track Assistant Professor position teaching undergraduate and graduate courses in law and taxation beginning in August 2012. Our AACSB-International Accredited Programs include undergraduate business education and a growing M.B.A. program. The university values excellence in teaching and development of students as individuals, and offers opportunities for collaboration with faculty members across-campus. An active student investment group, service-learning program, and internships provide opportunities for active learning. We are seeking a candidate who is teaching-oriented with an established or emerging record of successful research publications and who can fulfill Academic Qualifications as defined by AACSB. The appointment requires a J.D., Ph.D. or D.B.A. in a related discipline; ABD will be considered. Salary will be commensurate with degree and experience; research and professional development support is available. Applications should include a cover letter, teaching philosophy, *curriculum vitae*, teaching evaluations (if applicable), and letters from at least three references. Official transcripts are required for employment. Applications may be submitted in either hard copy or electronically; review of applications will be considered until the position is filled. Contact: Associate Professor Sharon Davidson, Search Chair, College of Business, Alfred University, Saxon Drive, Alfred, NY 14802; or email: businesscollege@alfred.edu. Alfred University is an AA/EOE Employer.

UTAH VALLEY UNIVERSITY (UVU), Department of Accounting invites applications for a tenure-track faculty position beginning Fall Semester 2012. Applicants should have an earned doctorate in accounting from an AACSB-accredited business school or be ABD and close to completion. The department offers a baccalaureate degree in accounting and an accounting emphasis in the M.B.A. program. Planning is underway for a separate Master of Accountancy degree. The department resides within the Woodbury School of Business, which is accredited by AACSB International. UVU is located in Orem, Utah, approximately 40 miles from downtown Salt Lake City and the Salt Lake International Airport. The metropolitan area has a population of 500,000 and offers many cultural and recreational opportunities. Currently UVU has over 32,000 students. Formal applications must be completed on the UVU website at: http://www.uvu.edu/employment. UVU is an Affirmative Action Equal Opportunity Equal Access Employer.

OPTIMUS HEALTH CARE, INC. seeks applicants for Chief Financial Officer. Optimus is the largest provider of primary health care services in Southwestern Connecticut. With 19 service-delivery sites located in the cities of Bridgeport and Stamford, and the town of Stratford, we provide comprehensive health care services to everyone, regardless of race, income, and insurance status. We are a private non-profit organization operating 19 Joint Commission-accredited community health centers, including health care centers for the homeless, school-based health centers, walk-in primary care center, dental clinics, general family health practice, social services, and behavioral health services. Under the supervision of the Chief Executive Officer, this position directs all financial activities of the Center, including defining and establishing the necessary accountability systems and development of a strategic financial plan. Has direct responsibility for financial planning, ARRA financial reporting, budgeting, general accounting, grants and contracts, insurance, payer contracting, billing, internal controls, auditing, and/or procurement. The ideal candidate will have an advanced degree such as M.B.A. or M.S. in Finance and/or CPA and at least ten years of experience within a non-profit health care setting. Must have the ability to lead and effectuate change within a culturally diverse workforce. Must be proficient in MS Office Suite and possess superior verbal and written communication skills. If interested please visit: http://www.optimushealthcare.org/

OHIO NORTHERN UNIVERSITY, James F. Dicke College of Business Administration seeks applications for one tenure-track ten-month appointment in accounting at the Associate Professor level beginning August 2012 to administer all aspects of the Accounting graduate program including admissions. Primary teaching responsibilities, under a two-two teaching load, include Auditing and Accounting Information Systems and other courses consistent with the candidate's professional interests and background. A well-established record of scholarship is expected. This position requires a doctoral degree in Accounting and demonstrated commitment to excellence in teaching, and academic advising. Evidence of research publications in peer-reviewed journals that would qualify the applicant for rank of Associate Professor. Teaching experience involving distance education is a plus. Applications must include a letter of introduction, resume, transcripts, and three letters of reference. Send applications to: Dean James W. Fenton, Jr., The James F. Dicke College of Business Administration, Ohio Northern University, 525 S. Main St., Ada, OH 45810

AUBURN UNIVERSITY, School of Accountancy is seeking to fill one full-time tenure-track Assistant Professor position, contingent upon budget approval, beginning Fall 2012. Job qualifications: Successful applicants must possess a doctorate in accounting from an AACSB-accredited institution prior to the date of employment. The successful candidate must meet eligibility requirements to work in the U.S. at the time the appointment is scheduled to begin and continue working legally for the proposed term of employment. Excellent communication skills are required. Job responsibilities: While all areas of teaching and research will be considered, the areas of immediate need are tax and AIS. Candidates must have strong research credentials/potential and will be expected to publish scholarly journals. The faculty member is expected to contribute in instruction, research, and service/outreach/extension. Candidates with professional certification are desired. Application procedure: Review of applications will begin October 2, 2011 and continue until a qualified candidate is selected and recommended for appointment. Applicants should mail a letter of application, *curriculum vitae*, teaching evaluations, a current working paper or dissertation proposal, and names of three references to: Recruiting Coordinator, 301 Lowder Business Building, Auburn, AL 36849. Materials may also be emailed to: acct@business.auburn.edu. Auburn University is an affirmative action, equal opportunity employer. Minorities and women are encouraged to apply.

UNIVERSITY OF CENTRAL OKLAHOMA seeks applicants for teaching undergraduate and graduate courses in Accounting, specifically in the areas of Fraud, Forensic Accounting, Auditing, Internal Auditing, and Accounting Principles, beginning with the Fall 2012 semester. Other responsibilities include research and service appropriate to rank and appointment. Doctorate in Accounting or Business Administration with Accounting concentration from AACSB-accredited college or school of business required. Previous teaching experience in higher education environment at level of Teaching Assistant or higher is required, and experience in teaching user-perspective accounting principles is preferred. Professional certifications including CPA plus one of the following, CIA, CFE, CBE, CFA, or CFI are preferred. Candidate should have sufficient education/training to accomplish refereed research in one of the commonly accepted Accounting fields. Consideration will be given to candidates who are ABD, nearing completion. Contact: Dr. Katherene P. Terrell at: kterrell@uco.edu, or (405) 974-5272. Apply for the position at: http://jobs.uco.edu.

THE UNIVERSITY OF OKLAHOMA, John T. Steed School of Accounting anticipates one visiting Assistant or Associate Professor faculty opening for the Spring 2012 semester. Salary/fringe benefits: Open and competitive based on applicable experience. Anticipated appointment date: January 1, 2012–May 15, 2012. General: All qualified individuals are encouraged to submit a resume and evidence of teaching qualifications to: January Nelson, Managerial Associate, Steed School of Accounting, Price College of Business, The University of Oklahoma, 307 W. Brooks, AH 200, Norman, OK 73019-4004; Email: jnelson@ou.edu; Phone: (405) 325-4223; Fax: (405) 325-7348. For questions, contact the Director of the Steed School of Accounting: Dr. Fran Ayres at: fayres@ou.edu. Interested applicants may also apply for the open Assistant Faculty position. Screening of applications will begin October 1, 2011. Applications will be accepted until the position is filled. QUALIFICATIONS: Education: Ph.D. in accounting or Master's degree and CPA or other professional qualifications (CMA, CIA etc.). Will consider candidates not holding a Master's degree who are CPA's with teaching experience. Teaching Candidates must be able and willing to teach at both the undergraduate and graduate level. Candidates must possess some prior teaching experience and provide evidence of quality teaching performance. EVALUATION: Qualified candidates will be evaluated based on evidence of quality teaching and fit to departmental teaching needs. The University of Oklahoma is an Equal Opportunity/Affirmative Action Employer. Women and Minorities are encouraged to apply.

WINTHROP UNIVERSITY, College of Business Administration seeks applicants. Major responsibilities: Teach accounting courses for undergraduate and graduate accounting and business students; conduct research in field of specialization; provide service to the business and professional communities, and other activities that support the mission of the College of Business Administration and Winthrop University. Qualifications: Tenure-track appointment, Ph.D. or ABD near completion is required. There is some flexibility with preferred specializations in audit or cost/managerial. Salary is competitive for each appointment type. Position availability: August 14, 2012. Application procedures: Application materials are due no later than January 15, 2012. Candidate review will begin on February 1, 2012 and continue until position is filled. For more information, please visit: http://cba.winthrop.edu/. Submit application materials to: Barbara Pierce, Department Chair, Acct Finc & Econ, Winthrop University, Rock Hill, SC 29733; Email: pierceb@winthrop.edu. Application materials: (1) letter of interest, (2) curriculum *vita*, (3) names, titles, addresses, phone numbers and Email addresses, if available, of at least three persons who know the candidate professionally, (4) evidence of effective teaching and scholarship, (5) transcript and evidence of highest degree achieved, and (6) Winthrop University application package (download from website: http://cba.winthrop.edu/).

WEBSTER UNIVERSITY seeks applicants for Assistant/Associate Professor and Program Director. Position has the responsibility of managing the details of the new M.S. in forensic accounting program, including but not limited to teaching, course development, advising, professional development, and other aspects of managing the program. In addition, the candidate may also have limited responsibilities with respect to teaching undergraduate and graduate accounting courses. Desired candidate will possess a Ph.D. in accounting or related field, with a specialization area and/or work experience in forensic accounting. A CPA and similar accounting and/or fraud and forensic credentials are extremely desirable. Apply for the position online by visiting our ad at the AAA Career Center site. Contact: Rich Dippel at: SBTFacultySearch@webster.edu; or Phone: (314) 246-5992.

WESTERN WASHINGTON UNIVERSITY invites applications for tenure-track Assistant or Associate Professor position in financial accounting and/or auditing beginning Fall 2012. The position is subject to funding availability. Doctoral degree in accounting or equivalent required by appointment date. Duties include teaching undergraduate and graduate courses, university service, and scholarly publication. WWU is AACSB-accredited and overlooks Puget Sound, is situated between Seattle and Vancouver, BC, and has 14,000 students. Please send letter of application (include how qualifications are met), *curriculum vitae*, evidence of teaching effectiveness, transcripts, and names of three references to: Professor George Sanders, Search Committee Chair, Department of Accounting, Western Washington University, Bellingham, WA 98225-9071; Phone: (360) 650-3202; Email: ACCTSearch@wwu.edu. Application review will begin September 19, 2011. AA/EOE.

CLAYTON STATE UNIVERSITY seeks candidates for two permanent faculty tenure-track faculty lines in accounting that are expected to be offered and filled beginning August 2013, with possibility of one beginning August 2012. We are an AACSB-accredited school with five full-time accounting faculty, supporting an undergraduate B.B.A. accounting major and an M.B.A. accounting concentration. We seek Ph.D.s in accounting from AACSB-accredited institutions. Rank of Assistant or Associate is negotiable with salary. CPA and other certification is desirable; 18 graduate hours in finance is also a plus. Our greatest needs in teaching are auditing and tax, but will consider candidate interests in AIS or financial. All accounting faculty are expected to teach accounting principles courses in addition to their interest areas. Opportunities exist for graduate teaching, and research and service requirements are competitive with other AACSB institutions. Our wooded campus of three lakes is located in beautiful suburban Atlanta, GA. We are an Affirmative Action, Equal Opportunity Employer. To learn more, contact Greg Kordecki, Phone: (404) 798-0150; Email: gregkordecki@clayton.edu.

UNIVERSITY OF NOTRE DAME, Department of Accountancy invites applications for position openings at all levels, Assistant, Associate, or Full Professor. All research areas will be considered. The appointment is expected to begin July 1, 2012. Applicants for Assistant Professor positions should expect to complete doctoral degree requirements before the start of the contract period. All candidates should have a strong commitment to scholarly research and excellence in teaching. Salary is very competitive, and research support is excellent. Please submit *curriculum vita*, three letters of recommendation, teaching evaluations, and an example of scholarly work electronically to: acctdept@nd.edu. Also, address inquiries to: acctdept@nd.edu. The deadline for applications is December 19, 2011. For more information about the University of Notre Dame, the Mendoza College of Business, and the Department of Accountancy, please visit the department's website at: http://business.nd.edu/accountancy/. The University of Notre Dame is an Affirmative Action Employer with a strong commitment to fostering a culturally diverse atmosphere for faculty, staff, and students. Women, minorities, and those attracted to a university with a Catholic identity are especially encouraged to apply.

WOODBURY UNIVERSITY, School of Business, Department of Accounting invites applicants for full-time graduate and undergraduate teaching beginning August 2012. Qualifications: Applicants must demonstrate that they meet AACSB's Academically Qualified (AQ) standards in accounting, have earned a Ph.D. from an accredited institution or possess an equivalent degree recognized by AACSB, and are eligible for U.S. employment. In addition, applicants must demonstrate the potential (1) to maintain AQ status, (2) to publish in peer-reviewed journals, (3) to be an effective teacher in a learning and student-centered environment, and (4) to participate in significant university service beyond the School of Business. A proven track record of scholarly publications and significant professional experience in the field of accounting is preferred. Those who are ABD in Accounting may also be considered. Remuneration: Competitive and market-based, depending on rank within the University's ranking system. Please send completed documents to: marta.carroll@woodbury.edu and include (1) a current *CV* that lists the candidate's educational and employment history and peer-reviewed journal articles, (2) contact information for at least three references, and (3) a letter of interest that demonstrates AQ status and addresses other qualifications. Contact: Marta Carroll, Human Resources Office, Woodbury University, 7500 Glenoaks Boulevard, Burbank, CA 91510-7846; Fax: (818) 767-7567. Woodbury University is an EEO/AA institution committed to multicultural diversity in its peoples and programs.

CALIFORNIA STATE UNIVERSITY, FULLERTON, Department of Accounting, Mihaylo College of Business and Economics Tax is seeking tenure-track faculty at an open rank position in the area of Tax. The successful candidates will be innovative teachers who are effective communicators and have strong instructional and computer skills. At the same time, all faculty are expected to maintain a rigorous, ongoing commitment to research that results in publication in high-quality peer-reviewed journals. Student advisement and department, college, and university service are also considered to be part of the responsibility of tenure-track faculty. The Department offers AACSB separately accredited programs at the undergraduate and graduate level. Qualifications: Candidates must have an earned Ph.D. in accounting (completed by August 1, 2012) from an AACSB-accredited institution. ·Preference is given to candidates who hold CPA certification and who have professional experience. Successful candidates must meet AACSB standards for academic qualification and can be classified as participating faculty. Teaching and/or significant professional experience is required for appointment at higher ranks. An ability to communicate effectively with a wide and culturally diverse range of students is required. Rank and Salary: This is an open rank tenure-track position. Salary is competitive and commensurate to rank, experience, and qualifications. Existing tenure-track faculty teach between 6 and 12 credit units per semester, depending on research productivity. Summer school teaching opportunities and summer research stipends (awarded on a competitive basis) are also available. CSU Fullerton offers an excellent comprehensive benefits package that includes health/vision/dental plans; spouse, domestic partner, and/or dependent fee-waiver; access to campus child-care as well as an affordable housing program; and a defined-benefit retirement through the state system, along with optional tax-sheltering opportunities. For a detailed description of benefits, go to: http://hr.fullerton.edu/Benefits/Faculty_Unit_3.pdf, Job Control Number 23603G-12-015. Position contact: Betty Chavis at: bchavis@fullerton.edu, or phone: (657) 278-2225.

UNIVERSITY OF DENVER, School of Accountancy is seeking applications for two tenure-track faculty positions at the Assistant Professor rank. An Assistant Professor is expected to teach and conduct research in accounting. Teaching responsibilities may include both undergraduate- and graduate-level courses, and evenings and weekends. Research efforts should produce high-quality publications. The expectation is to teach six (four credit hour) courses during the regular academic year, which is comprised of three quarters (fall, winter and spring). Quarters are eleven weeks long (including the week of final examinations). A course release for research activity is subject to competitive peer review. Summer teaching is optional and is subject to negotiation with the School's Director. It is compensated for separately. The Assistant Professor will conduct primarily discipline-based research. The Assistant Professor will also be expected to participate in department and college faculty meetings, assurance of learning, and the advising of students. Apply at: https://www.dujobs.org

BINGHAMTON UNIVERSITY, SUNY, AACSB-accredited School of Management invites applications for an Assistant Professor position in Accounting for Fall 2012, pending budget approval. Candidates must have (or expect) a Ph.D. degree by appointment. High-quality research as evidenced by publication in the top-tier accounting journals is expected. Research is supported with a two course/semester teaching assignment. The School of Management also supports research with subscriptions to WRDS and other standard databases. The University offers bachelor's, master's, and Ph.D. programs in accounting. More details are available at: http://som.binghamton.edu/faculty/index.htm. Located three hours from NYC and one hour from Syracuse and Ithaca, Binghamton is a low-cost-of-living area with 200,000 people. Interested candidates should post a *curriculum vita* and other supporting documents to the appropriate position listing at: http://binghamton.interviewexchange.com/. Application materials to be submitted electronically. Candidates must have (or expect) a Ph.D. degree by Fall 2012. Binghamton University is an Equal Opportunity/Affirmative Action Employer.

YORK UNIVERSITY seeks applicants for a tenure-stream position, at the rank of Assistant Professor, in the area of Financial Accounting. A Ph.D. in financial accounting in hand or near completion (expected by July 2012) is required, as is evidence of excellence, or the promise of excellence, in both teaching and scholarly research. Preference will be given to those with a professional designation in accounting who have university teaching experience at both undergraduate and graduate levels. The successful candidate will be expected to teach upper-level honors courses in Financial Accounting, and to contribute to graduate teaching and supervision. The successful candidate must be suitable for prompt appointment to the Faculty of Graduate Studies. Salaries will be commensurate with qualifications and experience. The start date is July 1, 2012. All York University positions are subject to budgetary approval. Candidates should submit a signed letter of application, an up-to-date *curriculum vitae*, a statement of specific teaching and research interests, summaries of teaching evaluations (if available), the names of three referees, and arrange for letters of reference to be sent directly, by November 15, 2011, to: Professor Peggy Ng, Director, School of Administrative Studies, 223 Atkinson, Faculty of Liberal Arts & Professional Studies, York University, 4700 Keele St., Toronto, Ontario, Canada, M3J 1P3. Posting End Date: November 15, 2011. York University is an Affirmative Action Employer. The Affirmative Action Program can be found on York's website at: http://www.yorku.ca/acadjobs, or a copy can be obtained by calling the affirmative action office at (416) 736-5713. All qualified candidates are encouraged to apply; however, Canadian citizens and Permanent Residents will be given priority.

UNIVERSITY OF MASSACHUSETTS LOWELL, College of Management (COM) the invites applications for a tenure-track position in the field of Accounting at the rank of Assistant/Associate/Full Professor. COM has over 2,000 undergraduate and M.B.A. students. Classes are taught in both traditional classroom settings and online. Salaries and teaching loads are competitive. The University is located about 30 miles northwest of Boston in the City of Lowell, the fourth largest city in Massachusetts with an ethnically diverse population of over 100,000. Requirements: An earned Ph.D. or D.B.A. in Accounting from an AACSB-accredited institution by the position starting date (September 2012 or later). A demonstrated record of, or at the Assistant level a strong potential for, high-quality research. A demonstrated record of high-quality instruction in some combination of Financial/Managerial Accounting, AIS, Auditing, or Taxes, at both the M.B.A. and undergraduate levels. Excellent interpersonal skills and the ability to speak and write English clearly. The ability to work with a diverse student and faculty population. Note: Strong consideration given to candidates with public accounting or corporate experience (e.g., CPA, CMA, etc.) Apply online at: http://jobs.uml.edu. Attach a (1) a statement of professional interests and goals, (2) *curriculum vitae*, (3) samples of research work, (4) evidence of teaching effectiveness, if available. Applications will be accepted until the posting is closed. Rank is open and salary is competitive. Position is contingent upon funding.

UNIVERSITY OF SOUTH CAROLINA, School of Accounting is accepting applications for one or two tenure-track positions open at all ranks and for all teaching and research interests beginning in Fall 2012. Candidates must possess a doctorate or expect to complete their doctorate by August 2012. New Ph.D. candidates must demonstrate the potential for teaching excellence and publishing in top tier journals. Candidates for an advanced rank should have a record of teaching excellence and publishing in top-tier journals. Salaries are competitive and commensurate with experience and achievements. All faculty searches are subject to the availability of funding. Submit *curriculum vitae*, working papers, and a defended dissertation proposal (new Assistant professors) to: Professor Al Leitch, Darla Moore School of Business, University of South Carolina, Columbia, SC 29208; Email: leitch@moore.sc.edu. The University of South Carolina is an AA/EEO employer. Minorities and women are strongly encouraged to apply.

LINGNAN UNIVERSITY, Department of Accountancy is committed to producing graduates with a broad-based liberal arts education featuring the latest theoretical and practical knowledge to face the challenge of the accounting profession in an increasingly complex business environment. Currently, the Department has a research focus on Taxation and Auditing, but also encourages research in Financial and Management Accounting. The Department is seeking a Professor/Associate Professor/Assistant Professor with teaching experience in at least two of the following areas: Financial Accounting, Auditing, Accounting Systems, and Managerial Accounting. CPA qualification and demonstrated research strength will be definite advantages. Please visit http://www.ln.edu.hk/job-vacancies/acad/11-156 for details. Please specify the post/level you are applying for and quote the reference number 11/156/AAA of the post in all correspondence.

CATCH, INC. Position available. Responsible for preparation of monthly financial reports and maintaining the accuracy of the general ledger. Assuring that all financial transactions are handled in accordance with Agency policies. Responsible for preparation of the annual budget. Supervisor of the Accounting staff. Preparation of billing documents and cost reports to all Agency funding sources. Assures that all Agency financial records are safeguarded and sensitive data is securely maintained. Responsible for the supervision of the preparation, as well as the timeliness and accuracy of the Agency payroll. Responsible for the supervision of the preparation, as well as the timeliness and accuracy of the Agency accounts payable payments to vendors. Responsible for the cash management of and the safeguarding of Agency funds. Responsible for risk management, which includes assuring that insurance coverage is maintained at an adequate level of protection. Also, included is reporting losses and review of insurance claims. Preparation for the annual financial audit work papers and interfacing with auditors so that a timely and accurate audit reports is produced. Backup for the Accounts Payable or Payroll Clerks duties. Special projects as assigned by the CFO or CEO. Other Accounting related matters as assigned. Undergraduate Degree in a related Business degree required. At least then years of previous accounting experience, which would include a minimum of five years supervision in the financial accounting field required. Demonstrated computer skills required. If interested please contact 215-735-7435 or visit: http://www.catchinc.com.

DARTMOUTH COLLEGE, Tuck School of Business Graduate School of Management anticipates a faculty search in accounting during the 2011–2012 academic year. We are open to all levels of appointment—Assistant Professor, Associate Professor, or Full Professor—and we will be recruiting at the new-Ph.D. level. Applicants must have a Ph.D. or be near completion of a doctoral degree in accounting or a related field. We will begin reviewing applications on January 3, 2012, and strongly encourage all applications to be submitted before that date. We seek candidates who will produce research of excellent quality that will have high impact on the field. There must be evidence that the candidate can conduct research and teach at a level of quality consistent with Tuck's high standards. We are interested in candidates who can interact effectively with others and enhance the intellectual environment of the school. The Tuck School of Business, founded in 1900, is consistently ranked among the top ten U.S. business schools. The Accounting group includes Robert Resutek, Leslie Robinson, Richard Sansing, and Phillip Stocken. The Tuck School fosters an environment that is intellectually stimulating and interdisciplinary. We welcome diversity. We look for excellence in both research and teaching and provide ample financial and logistical support in a highly collegial culture as a means to achieve these ends. The School provides faculty with state-of-the-art computer technology enhanced with in-house programming support. Library and academic coordinator support is generous, as is the funding is provided for research assistance and for travel related to either research or teaching. Chartered in 1761, the town of Hanover is a charming rural New England town that boasts sophisticated educational and cultural resources. The college is the town's largest employer. Residents enjoy a first-rate public school system and an award-winning teaching hospital, among other amenities. Recreational opportunities are abundant all year round, from paddling on the Connecticut River, to golf or skiing at college facilities that are open to the public, to hiking the Appalachian Trail, which runs through town. Hanover is located in the scenic Upper Valley of the Connecticut River, two hours from Boston, three hours from Montreal, and five hours from New York City. Faculty applications and all supporting documents must be submitted by email to: Faculty.recruiting@tuck.dartmouth.edu Specify in the subject line of the email that you are applying for an accounting position. Dartmouth College is an Equal Opportunity/Affirmative Action employer. Women and minorities are encouraged to apply.

DARTMOUTH COLLEGE, Tuck School of Business Graduate School of Management anticipates a faculty search in accounting during the 2011–2012 academic year. We are open to all levels of appointment—Assistant Professor, Associate Professor, or Full Professor—and we will be recruiting at the new-Ph.D. level. Applicants must have a Ph.D. or be near completion of a doctoral degree in accounting or a related field. We will begin reviewing applications on January 3, 2012, and strongly encourage all applications to be submitted before that date. We seek candidates with research and teaching interests concerning the management of health care. While the candidate will be on the tenure-track at Tuck, we expect there to be significant teaching and collaboration opportunities at The Dartmouth Institute for Health Policy and Clinical Practice (TDI), The Dartmouth Center for Health Care Delivery Science (TDC), and the Dartmouth-Hitchcock Medical Center. Both TDI and TDC are engaged in research, teaching and pilot implementation programs with world-class health care organizations. We are interested in candidates who have a developed research portfolio or who will produce research of excellent quality that will have high impact on the field. There must be evidence that the candidate can conduct research and teach at a level of quality consistent with Tuck and Dartmouth's high standards. The Tuck School of Business, founded in 1900, is consistently ranked among the top ten U.S. business schools. The Tuck School fosters an environment that is intellectually stimulating and interdisciplinary. We welcome diversity. We look for excellence in both research and teaching and provide ample financial and logistical support in a highly collegial culture as a means to achieve these ends. The School provides faculty with state-of-the-art computer technology enhanced with in-house programming support. Library and academic coordinator support is generous, as is the funding is provided for research assistance and for travel related to either research or teaching. Chartered in 1,761, the town of Hanover is a charming rural New England town that boasts sophisticated educational and cultural resources. The college is the town's largest employer. Residents enjoy a first-rate public school system and an award-winning teaching hospital, among other amenities. Recreational opportunities are abundant all year round, from paddling on the Connecticut River, to golf or skiing at college facilities that are open to the public, to hiking the Appalachian Trail, which runs through town. Hanover is located in the scenic Upper Valley of the Connecticut River, two hours from Boston, three hours from Montreal, and five hours from New York City. Faculty applications and all supporting documents must be submitted by email to: Faculty.recruiting@tuck.dartmouth.edu Specify in the subject line that you are applying for the Health Care Accounting position. Dartmouth College is an Equal Opportunity/Affirmative Action employer. Women and minorities are encouraged to apply.

GEORGE MASON UNIVERSITY, School of Management is accepting applications for a tenure-track appointment as an Assistant or Associate Professor of Accounting beginning Fall 2012. Preference will be given to those with teaching and research interests in financial accounting or taxation. Candidates should possess a doctoral degree by Fall 2012, be able to demonstrate potential for publishing in top-tier accounting journals, and demonstrate the ability to teach effectively. Salary will be commensurate with experience and qualifications. The School of Management and the Accounting Program are fully accredited by AACSB-International. Electronic applications are being accepted at: http://jobs.gmu.edu/, you will be required to attach your letter of interest and *curriculum vitae*. Questions regarding the search can be directed to: Ed Douthett, Chair, Accounting Area, School of Management, George Mason University, 4400 University Drive, MSN 5F4, Fairfax, Virginia 22030; Email: edouthet@gmu.edu. Review of applications will continue until the position is filled. EOE

TEXAS TECH UNIVERSITY seeks candidates for a full-time, nine-month, tenure-track position in the Department of Accounting and Business Law. Qualifications: A doctoral degree in Accounting, or ABD nearing completion, from an AACSB doctoral-granting institution. The candidate must have excellent communication skills, an interest in publishing in peer-reviewed journals, and a willingness to teach both on-campus and online accounting courses. Primary teaching need is Tax/Financial Accounting. However, candidates who are able to teach in other accounting areas are encouraged to apply. CPA professional certification preferred. Essential functions: Instruction in the undergraduate Accounting program and graduate M.B.A. and Distance M.B.A. programs at TTU. Development of an ongoing research program resulting in publication in peer-reviewed journals. Involvement in professional and university service activities. Salary and benefits: Commensurate with education and experience. Application procedure: Applicants must apply online at: https://jobs.tntech.edu/ and will be required to electronically upload a cover letter, *curriculum vitae*, copy of transcripts (official transcripts required upon hire), and email addresses for three references at time of application. Submission of materials is the applicant's responsibility. Applications without all required materials are incomplete and will not be considered. Application screening date: Initial review of applications will begin September 12, 2011; open until filled. TTU will hire only U.S. citizens and aliens lawfully authorized to work in the U.S. All new employees will be required to complete an employer's verification form, I-9, no later than three (3) days from date of hire. Index 210201, Position 114030.

UNIVERSITY OF MICHIGAN ANN ARBOR, Stephen M. Ross School of Business has tenure-track positions available in Accounting starting in the 2012 academic year. Candidates with research and teaching interests in all areas of accounting will be considered. Faculty positions at all ranks are available. The application should include a research paper, which may be based on the candidate's dissertation, evidence of teaching experience (if any), and a *curriculum vitae* that includes three references. To apply, please visit the Stephen M. Ross School of Business at the University of Michigan website: http://www.bus.umich.edu/FacultyRecruiting/. The review of applications will begin on November 30, 2011, and we strongly encourage all applications to be completed by that date. Applications will continue to be accepted until January 31, 2012. The University of Michigan offers competitive salary and fringe benefits and is an Equal Opportunity/Affirmative Action Employer.

MORGAN STATE UNIVERSITY, Graves School of Business and Management invites applications for a tenure-track position starting Fall 2012 at the rank of Associate or Full Professor. Candidates should have a Ph.D. degree in accounting from an AACSB-accredited institution and research and teaching interests in managerial/cost accounting. This position is primarily for our Ph.D. program in accounting although some teaching at the undergraduate or master's level may be required. Candidates should have significant refereed publications in accounting-related journals. Salaries are AACSB competitive. The University has business school accreditation and accounting accreditation by the AACSB. The business school offers a B.S. degree in accounting and a Ph.D. degree in Business Administration with an Accounting concentration. Master's-level accounting courses are offered in the general M.B.A. program. A master's degree program in Accounting is expected to be offered starting in Fall 2012. Morgan State University is located in Baltimore, Maryland, which is adjacent to the Chesapeake Bay and famous for its tourist attraction, The Inner Harbor. Baltimore is only 48 miles from Washington, D.C. and only a short driving distance from other major cities such as Philadelphia and New York City. Interested candidates should send academic *vitae* to: Alex P. Tang, Chair, Recruiting Committee, Department of Accounting and Finance, Morgan State University, Baltimore, MD 21251; Email: Alex.Tang@morgan.edu. Morgan State University is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF FLORIDA, Fisher School of Accounting seeks tenure-track faculty for position beginning Fall 2012. Job qualifications: Candidates should have strong potential in research and teaching. Ph.D. required. Application procedure: For consideration send a *vitae* to: Professor Robert Knechel, Recruiting Committee Chair, Fisher School of Accounting, University of Florida, 210 Gerson Hall, PO Box 117,166, Gainesville, FL 32611-7166. The University of Florida is an Equal Opportunity/Affirmative Action employer. Women and minorities are encouraged to apply. The selection process will be conducted under the provisions of Florida's Government in the Sunshine and Public Records law.

CALIFORNIA STATE UNIVERSITY, CHICO, Department of Accounting, College of Business is searching for a tenure-track Assistant or Associate Professor to start as soon as Spring 2012 but not later than Fall 2012. The minimum education requirement for appointment to this position is a Ph.D. in Accounting from an AACSB-accredited institution. Candidates nearing completion of the doctorate may be considered; however, the doctorate must be complete prior to the end of the first semester. Professional certification is required (e.g., CPA, CMA, CIA). Good verbal communication skills and excellent classroom presentation skills are essential for appointment. Preference will be given to candidates who have work experience. Preferred applicants will have a history of excellence in the classroom as well as demonstrated productivity in the areas of intellectual contributions and service. Review of applications will begin October 15, 2011. Applications received after that date may be considered until position is filled. All applicants must complete the Application for Academic Employment Form, which is available online at: http://www.csuchico.edu/faaf/Forms/FacultyEmplApp.doc, must be submitted with *curriculum vitae* or resume, complete set of transcripts, three letters of recommendation, copy of professional certificates, one example of a manuscript, and if available, example syllabi as well as student and peer evaluations of teaching to: Dr. Tim Kizirian, Chair, Department of Accounting, CSU, Chico, Chico, CA 95929-0011; Phone: (530) 898-6463; Fax: (530) 898-4970; Email: tkizirian@csuchico.edu.

UNIVERSITY OF MISSOURI–COLUMBIA, School of Accountancy is seeking applications for a non-tenure-track teaching faculty position in the area of taxation. Requirements include Ph.D., professional accounting certification, prior teaching experience in taxation, and strong interface with tax practice. Evidence of teaching excellence in taxation (e.g., awards, national recognition) and curricular innovation should be provided. Application materials including a letter of interest, *vita*, and evidence of teaching competence should be submitted online at: http://hrs.missouri.edu/find-a-job/academic/index.php. Two reference letters should be separately mailed to: Tax Recruiting Committee, School of Accountancy, University of Missouri, 303 Cornell Hall, Columbia MO 65211, or emailed to: accountancy @missouri.edu. Screening will begin immediately and continue until the position is filled. The University of Missouri is an Equal Opportunity/Affirmative Action Employer. Applications from minority and women candidates are strongly encouraged for this position. To request ADA accommodations, please contact the University's ADA Coordinator at (573) 884-7278 (V/TTY).

COLUMBIA UNIVERSITY, Business School seeks applications for faculty positions in Accounting. Rank is open. Appointment at senior rank requires outstanding record of scholarship. Candidates with an interest in Financial Accounting research will be preferred. We are looking for an outstanding person with evidence of a strong commitment to both teaching and research. Candidates should possess a doctoral degree or be close to completion. We offer a highly supportive research environment and easy interaction with faculty in other disciplines. Salary and benefits are competitive. Please send resume, an unpublished research paper, and letter(s) of recommendation to Professor Stephen Penman, Columbia University Business School, 612 Uris Hall, 3022 Broadway, New York, NY 10027. Columbia University is an Equal Opportunity/Affirmative Action Employer. To apply for this position, go to our online application site after November 30: http://academicjobs.columbia.edu/applicants/Central?quickFind=55055. Deadline: January 2, 2012.

LEHIGH UNIVERSITY seeks well-trained research scholars/teachers with strong teaching, research, communication, and interpersonal skills for two open positions at the Assistant Professor rank to join its Accounting Department faculty in fall 2012. The candidate must be able to teach both financial accounting and auditing courses, publish related research, able to work in teams with collegial attitude, provide service, and engage in other activities commensurate with our mission. A dynamic accounting department, a world-class undergraduate accounting program, a successful M.S. in Accounting and Information Analysis program, the 24th best undergraduate business school and 11th best undergraduate accounting program according to 2011 Bloomberg *BusinessWeek* are reasons to consider Lehigh. If interested, please send a letter of interest, *curriculum vitae*, letters of reference, and dissertation proposal or other scholarly work electronically to: inaccdep@lehigh.edu in care of Professor Parveen P. Gupta, Chairman, Department of Accounting, Lehigh University, 621 Taylor Street, Bethlehem, PA 18015-3117. Lehigh offers excellent benefits including domestic partner benefits; http://www.lehigh.edu/~inprv/faculty/worklifebalance.html. Lehigh University is an Equal Opportunity/Affirmative Action Employer. Qualified women and minority candidates are especially encouraged to apply.

CORNELL UNIVERSITY, Johnson School invites applications for tenure-track positions in our Accounting Group. Applicants at all ranks with research and teaching interests in financial or managerial accounting will be considered. Responsibilities of the position(s) include research in area(s) of expertise; teaching basic and advanced courses in accounting at the M.B.A. and Ph.D. levels; supervision of doctoral candidates; and service to the School. To be considered for this position, send a *vita*, copies of research papers, names and contact information of three references, and any other supporting material by email to: AccountingRecruiting@johnson.cornell.edu. Doctoral candidates and recent graduates must also provide letters of recommendation from their references. Application Deadline is December 31, 2011. Start Date: July 2012 Applicants must have a Ph.D. in Accounting or related field or be close to completion. Cornell University, located in Ithaca, New York, is an inclusive, dynamic, and innovative Ivy League university and New York's land-grant institution. Its staff, faculty, and students impart an uncommon sense of larger purpose and contribute creative ideas and best practices to further the university's mission of teaching, research, and outreach. Cornell University is an Equal Opportunity/Affirmative Action Educator and Employer.

UNIVERSITY OF MISSOURI–COLUMBIA, School of Accountancy is seeking applications for a tenure-track faculty position at the Assistant Professor level for Fall 2012. Candidates for the position must have an interest in Auditing and/or Financial Accounting, and be committed to high-quality scholarly research. Applications are encouraged from experienced Assistant Professors as well as new Ph.D.s or those nearing completion of their Ph.D. Salary and research support are competitive. Application materials including a letter of interest, *vita*, evidence of teaching competence, and a sample of working papers should be submitted online at: http://hrs.missouri.edu/find-a-job/academic/index.php. Three reference letters should be separately mailed to: Recruiting Committee, School of Accountancy, University of Missouri, 303 Cornell Hall, Columbia MO 65211. Screening will begin immediately and continue until the position is filled. Candidates for the position must have an interest in Auditing and/or Financial Accounting, and be committed to high-quality scholarly research. The University of Missouri is an Equal Opportunity/Affirmative Action Employer. Applications from minority and women candidates are strongly encouraged for this position. To request ADA accommodations, please contact the University's ADA Coordinator at (573) 884-7278 (V/TTY).

FLORIDA INTERNATIONAL UNIVERSITY (FIU) is seeking to hire faculty beginning in the Fall of 2012. All areas will be considered; however, our preference is for faculty with teaching interests in Taxation or Financial Accounting. The ideal candidate should have an earned doctorate in Accounting or related areas. Preference will be given to applicants with a strong commitment and capability for scholarly research and teaching excellence. Duties may include teaching in weekend and overseas programs. The School of Accounting at FIU offers a full range of academic degree programs including Bachelor of Accounting, Master of Accounting, Master of Science in Taxation, and Ph.D. in Accounting. Applications will be accepted via our website: https://www.fiujobs.org. FIU is an Equal Employment/Affirmative Action Employer, and is expressly committed to maintaining and promoting nondiscrimination in all aspects of recruitment and employment of individuals at all levels throughout the organization.

5717 Bessie Drive Sarasota, FL 34233-2399
P: 941.921.7747 F: 941.923.4093
E: info@aaahq.org

American
Accounting
Association

Maffet, Brown, Michels, Loumioti and Bai receive AAA/Grant Thornton 2011 Doctoral Dissertation Awards for Innovation in Accounting Education

The American Accounting Association (AAA) would like to congratulate Mark Maffett, Stephen Brown, Jeremy Michels, Maria Loumioti, and Ge Bai as recipients of the inaugural AAA/Grant Thornton Doctoral Dissertation Awards for Innovation in Accounting Education.

These AAA awards, which are sponsored by Grant Thornton, were presented to each recipient in the form of a $5,000 prize on Tuesday, August 9 at the AAA 2011 Annual Meeting held in Denver, Colorado.

For 2011, the committee has chosen the following five award winners:

Mark Maffett, University of North Carolina at Chapel Hill
Who Benefits from Corporate Opacity? International Evidence from Informed Trading by Institutional Investors

Stephen Brown, University of Florida
Can Public Client Disclosures Explain Pricing Patterns Observed in the Audit Market?

Jeremy Michels, University of Colorado
Do Unverifiable Disclosures Matter? Evidence from Peer-To-Peer Lending

Maria Loumioti, Harvard Business School
The Effect of Loan Syndication Structure on the Stewardship Role of Accounting

Ge Bai, Michigan State University
Accounting Experts on Boards and Governance Effectiveness: Evidence from Nonprofit Organizations

The AAA/Grant Thornton Doctoral Dissertation Awards for Innovation in Accounting Education were created to encourage innovation in accounting research starting at the doctoral level. In order to be considered for the award the student must demonstrate a substantial degree of innovation relative to the current state of a given area of accounting research. More information about this award is available online at http://aaahq.org/awards/GTDocDiss.htm. For 2011, the American Accounting Association and Grant Thornton are very proud to give this award to Mark Maffett, Stephen Brown, Jeremy Michels, Maria Loumioti, and Ge Bai for their exceptional work.

About the AAA.... The American Accounting Association promotes worldwide excellence in accounting education, research and practice. Founded in 1916 as the American Association of University Instructors in Accounting, its present name was adopted in 1936. The Association is a voluntary organization of persons interested in accounting education and research.

For more information on the American Accounting Association or this award, please visit http://aaahq.org or contact Deirdre Harris, Marketing Specialist, at deirdre@aaahq.org or 941-556-4119.

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